E351 R6

PR

ROCKS AND MINERALS

Photo by B. M. Shaub

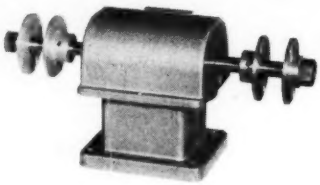
A fine quartz crystal about 8 inches long, from Deer Hill, Maine.

Mineralogy • Geology • Lapidary

60c

September-October, 1958

Whole Number 266

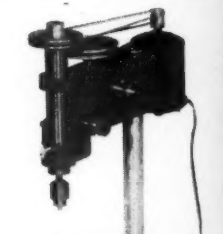


CROWN BALL BEARING ARBORS

Fafnir Sealed Ball Bearings
Heavy Cast Metal Housing
Hammertone Finish
Belts, Pulleys & Bearings Easily Changed
Belts & Pulleys Included in Price

1" Arbor—$38.95—Shipping Wt. Approx. 25 lbs.
¾" Arbor—$29.50—Shipping Wt. Approx. 19 lbs.

AUTOMATIC GEM DRILL



Fafnir Ball Bearings
Jacobs Chuck, 5/32" Capacity
1/15 h.p. Motor
Complete with Instructions

Drill may be used as conventional drill for jewelry, etc., by making a couple of very simple adjustments as explained in literature available. **$75.00.** Shipping Weight Approx. 12 lbs.

Dopping Wax 50¢ Stick.....$1.50 lb.
Crystolon Dressing Sticks.....$1.15 each

Cratex Rubber Abrasive Wheels—6x1".....$5.50
Cratex Rubber Abrasive Wheels—8x1".....$7.00

3x8" Sanding Drums, Covered with Felt and Sanding Cloth.....$7.50

8" Sanding Disc, Covered with Sponge Rubber.....$5.50

Arbor Sizes for All Above Wheels ½", ⅝", ¾" & 1"
Please Specify

Spec-Tec Blacklight Model HD Dual Unit.....$47.95
Long and Short Wave in One Handy Case

Spec-Tec Blacklight Model HSS Short Wave.....$29.95

Spec-Tec Blacklight Model HSL Long Wave.....$24.95

All Prices F.O.B. Los Angeles.

Please Add Sufficient for Postage and Insurance. Any Balance Will Be Returned with Order.

R & B Art-Craft Co.

11019-R So. Vermont Ave. Los Angeles 44, Calif.

Phone PLymouth 6-9296

ROCKS & MINERALS

PETER ZODAC, Editor and Publisher

America's Oldest and Most Versatile Magazine for the Mineralogist, Geologist, Lapidary.

Published Bi-Monthly

OFFICIAL JOURNAL

ROCKS & MINERALS ASSOCIATION

WHOLE NO. 266 VOL. 33, Nos. 8-9 SEPTEMBER-OCTOBER, 1958

CONTENTS

TRIP TO LAPIS LAZULI LOCALITY AT OVALLE, CHILE–*Rafael Perez* 387
MINERAL COLLECTING IN THE BLACK HILLS OF SOUTH DAKOTA (1957)–*Mary S. Shaub* 394
ROCK HOUNDS IN KOREA–*Raymond W. Worring* 398
QUARTZ CRYSTAL POCKET DISCOVERED ON DEER HILL, MAINE, IN 1956–*B. M. Shaub* 407
VISIT TO ALMADEN, SPAIN–*John F. Jedlicka and Charles Pelletier-Doisy* 411
LARGE CALCITE CRYSTALS FROM STAUNTON, VA.–*W. F. Giannini and W. C. Sherwood* 413
METEORITE CUTTING 421
MANGANESE MINES OF CRIMORA, VA.–*Edward J. Marcin* 424

DEPARTMENTS

THE AMATEUR LAPIDARY–*Conducted by Capt. George W. Owens* 415
THE MICRO-MOUNTER–*Conducted by Neal Yedlin* 418
WOMEN'S CORNER OF R&M–*Conducted by Winnie Bourne* 426
ROCKS AND MINERALS ASSOCIATION–*Conducted by Don Presher* 428
CLUB AND SOCIETY NOTES 432
PUBLICATIONS RECENTLY RECEIVED 438
WITH OUR ADVERTISERS–*Conducted by James N. Bourne* 441
FOSSIL DEPARTMENT–*Conducted by Howard V. Hamilton* 443
Penn. fossil plant locality–*Donald Badman* 443

MISCELLANEOUS

CHIPS FROM THE QUARRY 386
FULGURITES IN THE MAKING–*M. N. Reed* 406
VISITING ROCKHOUNDS WELCOME 410
FRANK DUNCAN FUND 414
COLLECTOR'S CORNER 427
CALIFORNIA FEDERATION CONVENTION SHOW–*Arthur W. Browne* 429
COLLECTOR'S KINKS–Cleaning Minerals, *by D. R. Walter* 431
BARITE LOCATIONS IN COLORADO–*Don Ingle* 440

Entered as second-class matter Sepember 13, 1926, at the Post Office at Peekskill, N. Y. under the Act of March 3, 1879.

Title registered in U. S. Patent Office.

Copyright 1958 by Peter Zodac

Specially written articles (as contributions) are desired.
Subscription price $5.00 a year; Current numbers, 60¢ a copy. No responsibility is assumed for subscriptions paid to agents and it is best to remit direct to the Publisher.
Issued bi-monthly on the 20th of the even months.
Authors alone are responsible for statements made and opinions expressed in their respective articles.

ROCKS and MINERALS, BOX 29, PEEKSKILL, N. Y., U.S.A.
(Office — 157 WELLS STREET — Tele. Peekskill 7-3185)

CHIPS FROM THE QUARRY

COMING EVENTS

October 4 and 5—Humboldt Gem & Mineral Society will hold its Fifth Annual Show at the Redwood Acres Fair Grounds, Eureka, Calif., Saturday, 10 A.M. to 10 P.M. the 4th, and 10 A.M. to 6 P.M. Sunday the 5th. Mrs. A. D. Pettingill, Publicity Chairman, Box 1075, Eureka, Calif.

October 4 and 5—Nebraska Mineral and Gem Club Show. Ballroom of Rome Hotel, 16th & Jackson Sts., Omaha, Nebr. (Frank J. Vokoun, Pres., 1521 So. 25th St., Omaha 5, Nebr.)

October 11 and 12—Annual Show of the Topeka Gem and Mineral Society. Municipal Auditorium, Topeka, Kans. (J. W. Tyler, Show Chairman, 812 Chester, Topeka, Kans.)

October 18 and 19—Annual Show of the San Francisco Gem & Mineral Society, Inc. Scottish Rite Auditorium, 1290 Sutter St., San Francisco, Calif. (Miss Lucille Rettig, Corres. Sec'y, 4134 Judah St., San Francisco 22, Calif.)

October 25 and 26—The 1958 Earth Science and Gem Show to be held at the Doylestown Armory, Doylestown, Pa. Sponsored by the Mineralogical Society of Pennsylvania. For information write: Wilfred A. Beveridge, 832 Main Street, Bethlehem, Pa.

See Earth Science and Gem Show ad in this issue, p. 465

Famous Mine Closed to Collectors

The famous iron mine (magnetite) at Tilly Foster, near Brewster, Putnam Co., N.Y., is now closed to collectors. Warnings have been posted on the property that all trespassers will be arrested and prosecuted.

Subscriber meets Sandy Ramsay!

Editor R&M:

Please change address from Padgate, England, to Norman, Okla.

Certainly enjoyed our stay in England. Found many collectors, all of them (with one small exception) to be very kind, generous, and probably more scientific about their hobby then the average American.

Have been telling myself to write up my trip to Strontian and the Isle of Skye (both in Scotland) but so far haven't gotten around to it.

Especially enjoyed meeting Sandy Ramsay in Glasgow, Scotland, who is every bit of what you'd expect from his writings and then some!!! What a guy!

Bill Hiss
437 W. Boyd
Norman, Okla.

New finds in Iowa

Geode Industries, 106 W. Main St., New London, Iowa, announce the finding recently of some interesting minerals. One specimen was sent R&M, a section of a large quartz geode which in one cavity contains some small black crystals of goethite on top of quartz crystals. Grayish-green earthy chlorite coats another cavity of the geode. The specimen comes from Clark County, Mo.

"This is a new find from this area and probably is not a top quality piece (very nice—Editor). We are just exploring this vein and should better specimens turn up we shall see that one is mailed you.

"Last year when we mailed you a small geode containing Herkimer 'diamonds' (from Clark Co., Mo.) we located only 21 of the geodes, 9 of which contained doubly terminated Herkimer 'diamonds' that were of lovely smoky quartz."—letter dated June 19, 1958, from Mr. E. E. Smith of Geode Industries.

An odd but attractive specimen of grayish claystone concretion was also received from Geode Industries. The label accompanying the specimen reads:

"This comes from a small creek near Lowell, Henry Co., Iowa. We will be glad to give directions to any rockhounds that call on us and wish to collect some of these concretions."

TRIP TO LAPIS LAZULI LOCALITY AT OVALLE, CHILE

By Rafael Perez

The Chilean carabinero returned our documents with a smile and, as he wished us "Buen viaje," we pulled onto the smooth Panamerican highway bound on a collecting trip to the Andes inside Ovalle at a Point on the Argentine border.

The Ovalle area has been a source of copper and gold minerals since the days of the Conquistadores and its mines are still worked for these metals as well as mercury, and we were executing long-laid plans to visit as many of these as possible and especially the lapis lazuli property high in the Andes. The owners graciously lent us all assistance in organizing the expedition and securing the requisite animals and guides so that we were in high spirits as we sped west over the straight concrete road. At Calera we followed the Panamerican Highway north and 15 miles later we had crossed the coastal mountains and were following the Pacific shoreline through the barren Chilean central zone.

We had enough time to make a side trip to an iron property near Pichidangue, which, although not large enough to be worked commercially, had produced some samples of a fine-grained hematite which we desired to investigate. Our directions were good and after asking directions from a few people, we engaged a man to lead us to the location. It required about 45 minutes of walking from the end of a dirt track, and we came onto some abandoned exploratory diggings which were obviously very old. We did not have equipment to clean them up but by picking around we were able to identify a narrow intrusive dike of mixed hematite and magnetite. At the contact with the diorite country rock, we were able to get a few pounds of beautifully consistent hematite which showed all the indications that it would polish well. We collected about 10 pounds and started back so that we would not lose our schedule for arriving at Ovalle. Our attempts at working the

No. 1—A Chilean carabinero checking documents along the road.

hematite have borne out that the quality is excellent and we expect to return again.

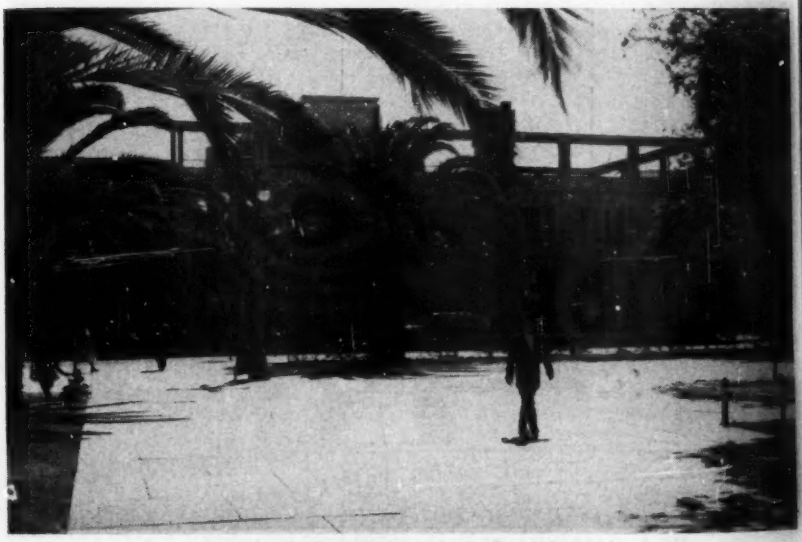
The diversion delayed us about three hours so that we arrived late at the Yacht Club at Pichidangue for lunch. From behind large picture windows, we watched a salvage vessel working over the submerged wreck of an old sailing ship from which they were recovering ingots of copper which, because of inefficient early refining practices, contain very high assays of gold and silver.

After a seafood lunch of crabmeat, fried cusk eel, and coffee, accompanied by some of Chile's fine white wine, we continued north to the valley of the River Limari. Considerable geologic activity is recognizable here—the fossilized marine sediments have been cut away by the river action and superimposed on this formation are the alluvial deposits of the river. Twenty miles up the valley to the east we arrived at the sunny, sleepy town of Ovalle, a center of both agricultural and mining activity. Beneath the slow rhythm of its daily existence there runs the feeling of unostentatious wealth like the low hum of a dynamo.

After a long hot shower in the Hotel Turismo we rested from the dusty drive and commenced checking with Sr. Juan Lira on the details of the trip up to the lapis lazuli mine. For ourselves and guide there were four hardy Chilean ponies, very similar to the U.S. quarter-horse, and ten pack mules to take in food and equipment. It became evident that this was no ordinary undertaking. In the high Andes we would need besides all our normal supplies, feed for the animals and, except for water, absolutely everything must be packed in.

This can become a vicious cycle—as the mules increase so must the number of mule drivers and when the number of men increased, we found it necessary to take along a cook. Finally, we formed a party of four rockhounds, four mule drivers with their horses, a cook and ten mules, a total of 19 animals and nine men.

The following morning, Tuseday, we spent sight-seeing and making last minute purchases so that after lunch we



No. 2—Hotel Turismo at Ovalle, Chile.

were ready to drive further east along the dirt roads to the farm of Don Patricio Ruiz at Tulahuen. Part of the three-hour trip was over an abandoned railroad bed, part cliff-hanging in the upper reaches of the Limari River and part through valley grazing land of the Tascadero River.

At the Ruiz farm we unpacked and inspected the animals which had been sent ahead of us in trucks and after organizing the equipment for the following morning, entered the rambling one-story mud-walled farmhouse to enjoy a delightful and relaxed dinner with Don Patricio and his family. We were at an altitude of 3000 feet with the Andes towering close above us on all sides so that in the quiet night, with its cool breezes, we slept immediately in two of the numerous guest rooms.

At daybreak the next morning we were awakened and served breakfast in our rooms by Indian maids. Our animals were fat and rested and it required two hours to saddle the horses and load the frisky mules. Shortly after seven o'clock we thanked our host and started along the Tascadero River toward the mine.

The Andes supply abundant water from the cracks in the rocks and this serves to maintain a valley rich in alfalfa and grass along which beef cattle was grazing in groups of from 20 to 300 and we estimated a total of 5000 head in the side canyons and river bottom. The hills, forming the valley through which we rode, towered above us to about 12,000 feet and although weathering is rapid there is almost no vegetation to hide the rock structure. Andesites, granites, and many forms of basic rock were evident and it was possible to identify the rocks higher up from the talus below.

At noon we stopped in a meadow called Vega de Polvo and rested for an hour from the considerable heat while enjoying the contents of cans from the saddle bags. As soon as possible we pushed on again until at 4 o'clock we entered another smooth grassy area with some low bushes which would serve as fuel and set up camp for the night. We killed a kid from a nearby herd and roasted it over the fire so that by 7

No. 3—Part of the pack animals coming into the amphitheater mentioned in the article.

we were all pleasantly filled and ready to call it a day. When the sun went behind the hills about 7:30, the cold night winds convinced us that a sleeping bag was the proper refuge. Thus ended our first day of riding.

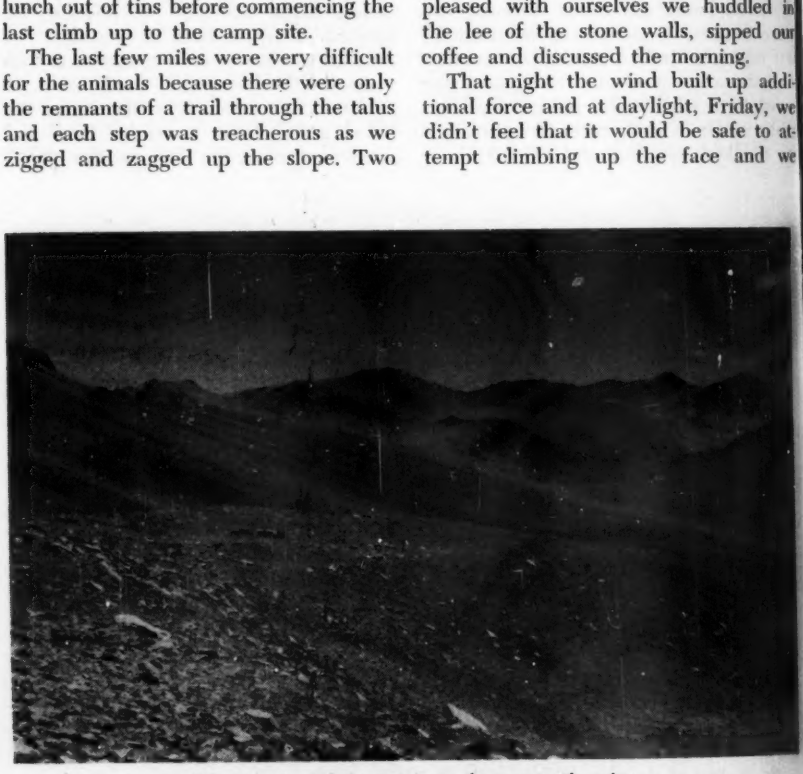
At daybreak, Thursday, we were up, caught the animals, breakfasted on hard-boiled eggs and bacon and were off before the sun's rays could warm the valley. The riding became dustier and more difficult. The level places were shorter and fewer, the valley narrowed and rose more steeply but the mountains were ever more beautiful in their nakedness. We saw no more cattle or vaqueros. As the sun rose, we shed our heavy clothes until we were down to our shirt-sleeves and at noon we waded across the Tascadero River and stopped for a fast lunch out of tins before commencing the last climb up to the camp site.

The last few miles were very difficult for the animals because there were only the remnants of a trail through the talus and each step was treacherous as we zigged and zagged up the slope. Two hours later we entered an amphitheater about two miles in diameter and on the eastern face was the lapis lazuli location. Across the ridge was Argentina.

The afternoon was well advanced as we pushed across the valley to a group of stone ruins where we intended to camp. The mules rolled on their backs happy to be free of their loads, as we commenced clearing a place for the tent and shelters for the gear and equipment.

A cold wind had been building up as we climbed the last two hours and it struck us with a steady and often gusty force so we hurried to get organized and fed before dark. The altimeter registered 10,800 feet and we could see the formation containing the lapis above us and about a mile to the northeast. Rather pleased with ourselves we huddled in the lee of the stone walls, sipped our coffee and discussed the morning.

That night the wind built up additional force and at daylight, Friday, we didn't feel that it would be safe to attempt climbing up the face and we



No. 4—A view of the terrain on the way to the mine.

spent the morning re-enforcing and improving the camp. We found a draw where the animals would be better protected but by two o'clock the pull was too strong and we decided to reconnoiter the distance up to the location. The wind and cold made itself particularly obnoxious but we were able to make our way over broken rocks along the side of the mountain.

Geologically there exists a huge granite mass with plagioclase, orthoclase, and a small amount of biotite which has penetrated a sedimentary limestone and marble within which are indications of pyrites and some copper minerals. We searched over this structure the first day with little success. The traces of previous workings were covered by talus and broken rock and still contained ice and snow. This was not going to be as simple as we had expected and we returned to the camp as the full moon rose over the mountains in the east.

During the night the wind had abated so that in the morning we took some dynamite and tools and went back to some workings and succeeded in clearing out some of the debris. We found in the largest hole considerable lapis but it was badly intermixed with grey limestone and not too attractive. For the rest of the day we picked around this working to try to find some good specimens.

The following morning we explored further along the contact zone of the limestone and granite and found far up in the crags indications of earlier workings, much smaller than those of the day before, but decided to clean out the muck and ice with another blast.

This time we found some veins which were really interesting. The material was free of grey impurities and of a lovely dark blue and with good specks of pyrites. This was what we were looking for and we commenced cleaning out the pit. By careful blasting we got out about 50 pounds which we packed down to camp to gloat over. Some, admittedly, was only fingernail size but we had one fifteen pound chunk and we discussed the best method of sawing and dividing.

No. 5—Campsite.

It seemed that this day was really worth-while, and we celebrated with some pre-mixed martinis which we had been hoarding. Late that afternoon, too, the mule, which we had sent that morning to the river for water, returned and there was another goat which, when roasted over a fire of roots and combined with hot corn muffins, left us in a satisfied and comfortable mood as we discussed whether to go down in the morning or try to get additional lapis lazuli.

The decision was taken out of our hands when the wind came up in the night, and we spent Monday huddled in the camp waiting for it to die down. It was too dangerous to go up to the mine or to try to get out of our valley and our guides feared that it might turn to snow for which we were not prepared. The situation was, frankly, quite uncomfortable but we had not expected mid-summer in the Andes to be so treacherous. No one really slept that night until at about 2 A.M., although the temperature remained below freezing, it was evident that the wind was abating and an hour later there were only occasional gusts.

On Tuesday we overslept and by nine o'clock a delightfully clear sky and no wind, coupled with the fact that we would be starting down too late, helped us decide to stay an additional day. So, while part of the group went up to our new find to get out some additional material, two others began exploring the area for additional indications. The latter found some garnets of not too great interest and an outcrop which, when picked open, yielded a good blue lapis with small white spots which promised an interesting contrast with the dark blue material. Quite happy with the find, we packed down 20 pounds and, with 30 pounds more from our first find, we returned to camp. The consensus was that we had accomplished what we had intended and it was time to get off the mountain.

No. 6—Lunchtime.

Therefore, before daybreak the following morning under the light of a bright moon, we broke camp and as the sun silhouetted the eastern peaks, we started down the trail to the river, With only one stop for lunch, we arrived at Sr. Ruiz's farmhouse at 8 o'clock in the evening—saddle weary, unshaven, and tired but with a sense of fulfillment that collectors will thoroughly appreciate.

No. 7—Lapis lazuli property seen from across the valley.

Comic strip about a rockhound!

Editor R&M:

My six year old boy looks at R&M and that amazes me as he can't read yet, only a few comic magazines like Panda Andy. I think someone should start a comic strip about a rockhound. I would like to do it but I can't draw. Just think what you could teach the kids about minerals!

Mrs. Arlene Handy
4391 Comfort Rd.,
Tecumseh, Mich.

Learning Micro-mounting!

Editor R&M:

I am especially enjoying the Micro-Mounter. Our San Francisco G&M Society is slowly becoming interested and I meet with a small group of novices every month. We are all learning together. Wish Baltimore was closer to us out here!

Mrs. George H. Learned, Jr.
428 Belvidere St.
San Francisco, Calif.

Good reading and helpful!

Editor R&M:

Have been traveling 9 months on a "rock" expedition but R&M is just as fine no matter when it catches up to us and a big help on this trip.

Mrs. Alice L. Haggard
Rt. 1, Box 1023
Marysville, Wash.

Still enjoys R&M!

Editor R&M:

You will recall I wrote you from the hospital recently where I underwent surgery. In retrospect, it seems the only real concern I experienced was that of missing my renewal to R&M. The surgeon cut me up quite a bit but I am happy to say he left my enjoyment of ROCKS AND MINERALS intact. God bless him and you.

Winston Gold
4024 167th St.
Flushing 58, N.Y.

Mineral Collecting in the Black Hills Area of South Dakota 1957

By MARY S. SHAUB
159 Elm St., Northampton, Mass.

The Black Hills and the adjacent areas in South Dakota, Nebraska and Wyoming have long been famous for a great variety of minerals and have been a favorite collecting region for the mineralogist. Since the publication of the U. S. Geological Survey Central Black Hills Folio in 1925 and the opening up of many pegmatites in the Keystone area, interest has continued, and with the establishment of the Badlands as a National Monument attention has been focused more on the southwest section of South Dakota. Here the mineral collecting areas have been sought out by collectors spending their vacations in the region.

Although the Black Hills region has been a collecting spot for many years, there is still opportunity to obtain mineral specimens in the field with a little effort. Approaching the Badlands from the east on Route 16A a favorite stopping place is Cedar Pass Lodge where food and accomodations can be obtained; however cabins should be reserved in advance if one wishes to be certain of lodging there. Close by is a new campground providing good water and camp sites, and its location in a sheltered area should assure one of adequate protection from rain squalls which come up now and then in the form of thunder storms. At Cedar Pass Lodge there is a fine mineral shop offering local and worldwide minerals and finished jewelry at reasonable prices. Close by the lodge are beds of chalcedony forming horizontal layers in the Badlands Formation and as these break up into pieces, the material falls to the bottoms of ravines and along the roadside. At the town of Interior, three miles away and outside the National Monument, one can pick up pieces of this chalcedony which varies from gray to reds and can be polished into attractive slabs and cabochons.

From the town of Interior one can visit the famous Rattlesnake Butte sand-calcite crystal locality which is located 30 miles south of Interior. Approaching Interior from Cedar Pass you cross the railroad tracks and immediately turn left on a good gravel road. Four miles beyond, one crosses the White River. 10.7 miles beyond the river there is a large sign on the right indicating the roads to Wamble, Kyle and Potato Creek. 5.2 miles beyond this junction there is an airplane hangar on the right and a group of buildings. Five miles beyond, there is a windmill on the left and a dirt road into which you turn. (If you should miss this turn, exactly one mile beyond is the Bennett County line.) 2.1 miles on the dirt road you will see two buttes on the left and also the Hawley Boomer ranch in a valley on the left. Turn here and stop at the Boomer house which is .8 of a mile off the dirt road. Permission must be obtained at the Boomers' before entering their property and proceeding to the site of the sand-calcite crystals.

To reach the buttes one must drive across the field 2.2 miles along a faint vehicle track. There are gates which must be carefully closed when entering the several fields. The two buttes are separated by a saddle across which it is possible to drive with the higher and smaller northeastern Butte on your right. It is possible to drive up onto the top of the westernmost butte (Rattlesnake Butte) where the crystals occur. The two buttes are part of a wide semi-circular rock ridge that rises about 75 to 100 feet above the fields. Only Rattlesnake Butte affords good crystals. The North Butte contains rounded concretions and aggregates of radiating calcite crystals and/or grains. Well-formed crystals are absent here.

On Rattlesnake Butte there is an area

along the top extending about 150 to 200 feet where many weathered crystals cover the surface. The best collecting place is in the sandy areas a few feet below the surface. The crystal groups occur in a zone parallel to the bedding in moist, unconsolidated sand and the groups of crystals often break into smaller specimens during extraction.

After leaving the Badlands the collector will find it worthwhile to visit the golden barite locality near Wasta on Routes 14 and 16. Between Wall and Wasta one can see outcrops of the black, friable Pierre Shale which contains concretions varying in size up to four feet across. Many of these have been broken open by collectors with disappointing results. Some good material can still be obtained along Elk Creek not far from Wasta. Heading west from Wasta on Route 16 take a dirt road right at .2 of a mile; at .7 of a mile further on take the left fork and at 1.4 miles beyond the fork take the left road which is a good gravel road heading north across grazing lands. 6.7 miles along this road there is a road cut containing concretions some of which will yield fossil snails displaying beautiful sutures. Three tenths of a mile beyond the road cut you cross a dry creek and 4.7 miles past the dry creek you come to Elk Creek which has high banks of Pierre Shale and many concretions are obvious on both sides of the road. Immediately after crossing the creek is Glen Ferguson's house on the left where inquiry should be made regarding collecting in the creek.

A dirt road leads directly to the creek which can be crossed in dry seasons and one can drive along the bank for a short distance. It is well to explore the small tributaries as the concretions here in the black shale may contain fossil shells and snails. In the summer months the low level of Elk Creek makes it possible to cross and re-cross thus enabling one to investigate concretions in both banks. Most of the concretions in the stream have been broken open but those newly exposed on the banks will usually yield fluorescent yellow calcite crystals and, if one is fortunate, the fine amber-colored barites which are extricated only with the greatest difficulty as they fracture across readily when the concretion is broken open. As new concretions wash out of the banks from time to time there is the chance of finding barites and fossils in this area.

Before continuing further with mineral collecting in this region, one should by all means visit the fine mineral museum of the South Dakota School of Mines which is located on Route 79 (East St. Joseph Street) in Rapid City. The museum collections are housed in a new building and are well displayed. Notable among the exhibits are a huge specimen of sand-calcite crystals from Rattlesnake Butte, a superb group of Fairburn agates and collections of minerals from the Black Hills as well as many mineral specimens from all parts of the World.

The Fairburn Agate Locality is a worthwhile visit from Rapid City. Route 79 south takes one to the town of Fairburn. Here one drives south about 300 feet and then at the four corners (.2 of a mile from the post office) you leave route 79 and continue straight east on a narrower road to a point 3.5 miles from Fairburn where you take the left fork and follow the valley of French Creek. 5.4 miles beyond the fork you pass the McDermand Ranch on the right and 2.1 miles beyond the ranch there is a large 4-H sign on the left indicating a picnic ground. Open the gate and drive into the field and across a creek (.3 of a mile beyond the gate) following a narrow but passable road to a point .7 of a mile beyond the creek where you will see gravelly knolls in which many agates have been found. One can drive with caution down into the area but your luck in collecting in these famous Kern Beds is unpredictable—it may be fair or very poor. The beds cover a number of small hillocks and there are many indications that collectors have been busy in cracking open hundreds of supposed Fairburn agates. Now and then a present-day collector finds a good Fairburn but the agates

are very scarce indeed. Rather than expending the effort to crack open likely specimens, the agate hunter should spend his time turning over potential specimens as in most cases the bands are readily discernible from the exterior. There is also much red and banded jasper here some of which is worth picking up as it makes attractive cutting material. If one has time one should also visit the Oelrichs beds south of Hot Springs on Route 79 and the Ardmore beds south of Edgemont, South Dakota, the latter beds extending into northern Nebraska.

Custer, South Dakota is another good center for mineral collecting and the Stockade Campsite in Custer State Park is a good public camping place. At the Gold Nugget Rock Shop, 2.4 miles east of Custer and at The Rock House in the center of Custer one can see fine examples of slabs of the Tepee Canyon agate and it is possible to visit this agate locality. Driving west from Custer on Route 16 at 6.4 miles you pass a roadside park on the left and 7.1 miles beyond the park is the Jewel Cave entrance on the left. Continuing 3.5 miles beyond the cave there is a trail leading to the right. Park here, go through the gate and up the steep hill to the left of the trail. This is the most popular of the Tepee Canyon agate localities, the agates being found in concretions in the Minnekahta formation, a nearly horizontal limestone layer circling the hill. Along the top one can see the results of agate collecting which is largely carried out in the winter months when the frozen friable strata make 40 feet deep excavations moderately risk-proof. The best accessible material has largely been removed from this locality and much stripping of the overlying rocks will be required before more good concretions can safely be recovered. There are many pieces of red jasper scattered

Mrs. Shaub (the author) collecting jasper and agate at the Tepee Canyon Agate locality west of Custer, South Dakota.

along the ridge and although these are not banded they do provide interesting cutting material. There are other agate localities that produce material similar to the Tepee Canyon specimens; some of these are in Hell's Canyon nearby.

Close to Custer there is also the famous Scott's Rose Quartz Mine where much fine material has been recovered. The Scott family have been cordial to collectors in the past but a few unscrupulous rock hounds have carried away undue amounts of fine dark pink quartz and so the mine is closed to collectors. However, one can purchase good material at the Scott's Rose Quartz Company store in Custer at very reasonable prices.

The Keystone area of the Black Hills offers good collecting still. The most famous of the pegmatites of this area is that in which the Etta Mine is located. This mine is easily reached by taking the Greyhound Gulch Road from Keystone and continuing straight ahead for .8 of a mile. At the present time only five men are employed here, four working underground sorting the spodumene which is hauled to the surface on an inclined shaft and then wheeled to the storage bin. The manager, Dwight Peterson, welcomes visitors to the large open pit where it is still possible to see huge spodumene crystals in quartz masses in the center of the workings and also in the walls although these crystals do not equal in size the 47 foot giant that has made this mine so famous. On the extensive dumps it is possible to collect milky quartz, cleavelandite in bluish-gray bladed crystals, long blades of biotite, masses of small muscovite crystals some of which are associated with fractured black tourmaline crystals. Bluish-green apatites are found sparingly associated with quartz or feldspar, the latter mineral often containing manganese as dendrites or as black masses. Arsenopyrite is found sparingly in the cleavelandite and beryl occurs now and then as flat crystals. Some spodumene is lost in sorting and finds its way to the dump and often these crystals are stained pink with the alteration product, montmorillonite.

The serious mineral collector can also visit the Hugo Mine which is reached by returning toward Keystone on the Greyhound Gulch Road .5 of a mile to the four corners and then turning left and driving .2 of a mile to the mine. The superintendent will give the mineral collector permission to visit certain sections of the extensive open pit workings where one can find principally amblygonite, a little beryl, black tourmaline, gray quartz containing molds of spodumene crystals, cleavelandite, muscovite and triphyllite. Of particular interest here is the circular picking bin around which several miners stand and sort the feldspar from the waste rock. The Peerless Mine which stands up conspicuously above Keystone is also worth a visit. To reach this mine one returns to the four corners from the Hugo Mine and continues straight ahead bearing to the left around the big open cut for a half mile. The manager, Mr. Walker, is receptive to the serious collector and will show you the sorting bins where mica, beryl, columbite and feldspar are hand separated and the new small open pit. From the old open pit on the opposite side of the hill one can still find good-sized pieces of fine yellow lepidolite.

About 12 miles outside Keystone is the famous Bob Ingersoll Mine where there have been found a very large number of minerals including a few fine uraninite specimens and many showy masses of purple lepidolite which sometimes contain pink tourmaline. Here again it is unfortunate, but only the professional geologist who contacts the manager ahead of time can obtain admittance to the mine which is still producing fine mineral specimens.

No trip to the Black Hills is complete without a visit to the famous Homestake Mine at Lead. Here one can see the old open workings with the vein system and visitors may take a conducted tour of the mill. At Deadwood one can also go underground in the Broken Boot Gold Mine and at a number of points

(Continued on page 437)

Rockhounds In Korea

By RAYMOND W. WORRING
516 W. Aluminum St., Butte, Mont.

It was raining that day in December, 1955, when the troop transport USS General Mitchell left Seattle bound for the Far East Command. It would carry fresh troops to Japan and Korea to relieve the men who were rotating home. Lucky guys. The voyage was long and for the most part uneventful. I'll never forget Christmas Day 1955. We went to bed the night of the 24th, Christmas Eve, and awoke the morning of the 26th of December. We had crossed over the International dateline during the night and completely lost the 25th of December, Christmas Day. New Years Eve was spent docked in Yokohama Harbor, Japan. Two days later we were in Inchon, Korea. An uneasy truce hung over the 38th parallel when we landed that cold January morning.

Recently some Americans have been trying to visit Red China. I wonder how anxious they would have been had they had the opportunity to meet these people on the battlefield in Korea. I wonder what the G.I.'s lying under the white crosses would think if they knew there were Americans wanting to take the Grand Tour through the country that many of them had seen from prison camps and others that had felt the brunt of a communist bayonet. Only a truce exists in Korea, we seem to have forgotten. We were landing in Korea and no one had any intention of dropping in on the Red Chinese for a visit.

All the thoughts of possible war made very remote indeed the idea that I would continue the study of minerals even more fantastic collecting them. My assignment was with the 76th Engineer Batallion (Cons.) in Seoul, Korea. The entire tour was spent in the Seoul area.

I was completely unaware at this time the wheels of fate which had already been set in motion and would cause me to pursue further the study and collecting of minerals. Only thoughts of possible war were crowding my mind—little did I realize the exciting adventures I was to encounter in this strange country collecting rocks.

In November 1955, Sylvia arrived in Korea and resided in the American Embassy compound. Little did Washington, D. C., realize that the first American Mineral Club to be attempted on foreign soil was to come out of this assignment. Despite the many obvious deterents to pursuing any sort of hobby in Korea, Sylvia was hell bent on organizing a Mineral Club. She had already been offered 30 tons of tungsten due to misunderstanding of the term "Rockhound." It would work into the Army's plan to try to make the stay and occupation tour in the Far East as enjoyable as possible under the circumstances.

Those first weeks in Korea were the most difficult. I could not put out of my mind the constant threat of the 38th parallel. Perhaps it was the strange odors, the barren hills or the bitter cold of the winter but that awful homesick feeling was overpowering my senses and try as I would it would not leave me.

Outside the Army Compound it seemed everything was "Off Limits" to UN Personnel and my homesickness only seemed to increase. Trudging thru the Compound one afternoon my eyes fell on the words Hobby Shop. Here was one answer—make something, anything, at least the off duty hours would be filled. Entering the Hobby Shop the words "Mineral Club" stopped me, for so recently had I left the club back home and this was a new project with the first meeting yet to take place.

With much anticipation I attended the first meeting. It was here I discovered a roomful of avid and enthusiastic rockhounds, especially Sylvia, who had ar-

ranged the first meeting. We discussed a field trip for the following Sunday and each one was assigned a job, mine being to act as guide.

And so with the planning of the first field trip so the problems started mounting, the most important being transportation. There were no private automobiles as we would use on trips back home and roads in such poor condition only jeeps or trucks would be practicable. It seemed the country was too poor for a road program. As a result of the bad road conditions the vehicles made available thru the Army were in constant state of repair. Local transportation was also out of the question for these buses were held together with baling wire.

Many of the surrounding mountains and valleys contained land mines which were left from the last war. This was accepted as a necessary handicap and we proceeded but with much caution.

Everything was set-up now, we had been briefed on land mines, cautioned about separating from the main party and agreed as to basic rules of ethics while rock hunting.

With the cooperation of the Korean Mining Bureau the first trip was to the Buying Placer Gold mine located on the West side of Yongjong-do Island. It is reached by a 20 minute boat ride from Inchon followed by a motor vehicle ride of about 45 minutes on the island.

Sunday morning 8:30 AM found us boarding a ¾ ton Army truck full of enthusiasm and bright shiny faces. As the truck turned into the main road of Seoul we were again reminded of communist treachery for the blackened scarred shells of buildings were everywhere.

The road to Inchon was filled with various kinds of moving humanity, there were farmers leading the oxen, men carrying grotesque loads on bicycles, and women balancing nonchalently bizarre loads on their heads with a baby strapped on their back. Little villages along the road were lined with open markets to the delight of the flies for produce was spread on straw mats on the ground. Every vehicle that passed only added another layer of dust over the food displayed. This is a poor country that only so recently has known the ravages of war.

It seemed the ride to Inchon would take forever, the driver explained he could not attain a speed of more than 20 mph. Not only was the road full of "pot" holes but people seemed to be moving in an endless parade. The driver swerved from one side of the road to the other in order to avoid mishaps but what it was doing to us in the back end of the truck was proved the next day—"sitting" was done with the utmost of caution.

Fertilizer at best is not suggestive of the more beautiful things in the world and here the countryside was most odorous—human excretion being used to fertilize the fields. Travel in Korea is difficult, along with the discomfort of the swirling dust and rough roads the smell coming from the infinite number of rice paddies is overwhelming.

Man made structures and man himself still bear the marks of war but only the land seemed to have recovered. Grass has grown in the bomb craters and rain has washed away the blood stains. Only a few trees dot the countryside breaking the monotonous pattern of

The Scouting Committee. The kneeling figure on right is Ray Worring—on extreme right is Sylvia Czayo.

rice paddy dikes. We passed thru a number of small villages each being similar to the other before reaching Inchon. I remember seeing an advertisement in one of the villages that was the result of merging American and Korean cultures—it read "Second Hand Ice, For Sale."

Inchon is located on the West coast of the Korean Peninsula looking out into the Yellow Sea, the harbor area is heavily indented with numerous shoals and islands. Tidal fluctuations off Inchon are among the highest in the world reaching 30 feet or more. The harbor is silted up and when the tide is out broad mud flats extend for a couple of miles finally joining the Sea. Because of these broad mud flats it is necessary to plan your arrivals and departures very carefully watching the changing, fickle tide. There was one trip we miscalculated and for several hours were "stuck in the mud" waiting for the tide to refloat us.

A landing barge was waiting for us at Inchon but because the ride had been so long the tide had gone out and we could not take the truck on the barge. We learned the hard way how to plan our trips but for the moment "ignorance was bliss" and the pilot of the craft assured us he could unload on the island. I have traveled in many types of conveyances during the many years spent rock hunting but the various kinds of transportation here topped them all.

As Inchon faded from view our attention was drawn to the fishing vessels dotting the harbor. A Chinese "Junk" sailing ship passed us as we neared the island and the "shutter bugs" among us went to work. Fleecy white clouds hovered over the two mountains at the northern end of the island and with the blue sky crowning this along with a temperature in the 70'S, a slight breeze from the direction of the Yellow Sea, it was truly a day for rock hunting and picture taking.

At 11 AM the barge was steered onto the island, the big steel gate at the bow lowered and we clambored ashore. Luckily the landing had been on one of the rocky sections of the shore or we would have stepped off into a foot or two of slimy mud. The pilot of the landing craft gave instructions for us to be back at this point no later than 4PM in order to catch the tide otherwise he would have difficulty getting us on board. With this happy thought the barge pulled away from the island leaving us to whatever the fates had decreed.

Lunches and equipment equally distributed we turned and headed toward a little village hugging the shore. Only a few steps were taken before we found ourselves surrounded by the many Korean children who seemed to come from every rock and mud hut in sight. The inevitable candy bar and chewing gum were passed out and we continued on the road ahead with the children happily dancing along in back of us.

We were told the gold mine was still some 15 miles away and the only means of transportation was a bus that made 3 trips daily. Our spirits soared for we were most anxious to get to the mine—this was short lived however, for the next word was the bus left at 12 o-clock. Looking over the bus we doubted that it would get us anywhere for it was held together with wire, most of the windows were out, the others broken, including the window directly in front of the driver, there were no headlights and the body seemed to be listing heavily to the starboard side as tho' it already had a heavy load but there it stood "empty." Not wanting to waste more time we decided to walk and a fast pace was set for the marathon. Although we were traveling light it seemed we were not making very good time, perhaps there were too many stops for the "shutter bugs." The island lent itself perfectly to picture taking, there were many old tombs and Mr. Min, our interpreter, informed us the stone dolmens had been set up in prehistoric times.

The dresses of the Korean ladies were colorful and Sylvia got several ladies to pose for us. They wear a tiny jacket

with long full sleeves which ties with a ribbon over the left side of the female anatomy. From under this tiny jacket a long flowing skirt falls gracefully to the tip of the little rubber shoe with a turned up toe. The bright colors of the costume are quite a contrast from the little mud huts they live in.

One hour and thirty minutes of walking someone shouted the bus was coming. Mr. Min suggested we take the bus at this point because the gold mine was still some distance away and time was growing short. As the bus rolled into close range it was evident there was no room but Mr. Min flagged it down anyway. Somehow we got in that bus, packed like sardines in a can, but we were in.

When we boarded the bus no one notices the potent odor of Keem-Chee* but as the minutes rolled by a very strong smell was overtaking us. Had I not been effected by it also perhaps the strange expressions on those "rockhounds" faces would have been amusing, however, I suddenly became aware of a peculiar sensation in my stomach. For the remainder of that ride everyone of us fought the battle of nausea.

The bus traveled unbelieveably slow, stopping every few minutes to let off passengers. At one rather steep incline the bus stopped and every Korean got off except the driver, suddenly we realized why, both men and women were pushing the bus up the hill. Forty-five minutes later we arrived at the end of the line and right at the gold mine.

*KEEM-CHEE is a pickle that is served at all meals made from raw vegetables and is considered a good source of vitamins to the Koreans. Ingredients include; cabbage, garlic, red pepper, ginger, turnips, onions, celery, raw fish; sometimes fruits are also included. These ingredients are placed in an earthern pot and buried in the ground to "season."The seasoning can take place from one to six months after which the odor is more potent. Keem-Chee and Limburger cheese have much in common, the odor is highly potent in each one.

I was more than ready to leave the bus at this point and happy at the thought of "hunting." As we headed for the open pit of the mine Mr. Min remained with the driver to get the schedule back. A lively conversation started and just as we reached the edge of the open pit Mr. Min called us back. The bus schedule was 3 o'clock from the other end of the island and the driver would not make any concessions even for a price. If we remained at the gold mine the 4 o'clock schedule of the landing barge would be missed. To say we were disappointed to learn that we could only spend a few minutes at the mine would be an understatement. There were other trips to the placer gold mine but this was the only time we found the mine drained of water!

Mr. Lee, the owner of the mine, took the bus ride back with us and made the drive interesting by telling us about the mine. Placer gold was discovered here about 1934, although other mines in the vicinity had been worked for some time prior to then. The placer area was worked by hand from 1934 to 1942 when Japanese war time law stopped all gold mining. During this period production is claimed to have been 1,250 kilograms of gold, which at a price of $35 per troy ounce, would have a value of over $1,000,000. In March 1952 hand operations were resumed and have been carried on more or less continuously since then.

The placer ground lies under tidal mud flats on the west margin of the island and in the channels between it and islands further toward the sea. The uppermost margins of these tidal flats nearest shore are said to be covered by tidewater only during high tide level of spring tides but remain uncovered during near tides even at high tide level. Most of the tidal flat area is covered by tidewater twice daily.

The gold bearing strata is covered with about 45 feet of overburden. The gravels in which gold occurs ranges in thickness from 2 to 10 feet. Gravel particles are composed of vein quartz and

quartzite, angular in shape, with corners and edges subrounded. This then would indicate the material had not traveled far from its original source.

Mr. Lee very kindly compensated our disappointment by presenting us with some specimens of nuggets. The well preserved crystalline structure and comparative lack of rounding or battering of these nuggets indicated that the gold had not been traveling far. With this information on the gold mine we decided to return in the near future but with our own transportation, for it sounded as tho' there would be great "pickins."

About halfway back across the island the bus had a flat tire. There was no jack and I thought we would all have to lift the bus while the tire was changed. The driver had been thru this before and was quite adapt at the following procedures which held us spell bound. From the side of the road he picked up some stream worn boulders and placed them under the bus. Then he disappeared and after a few minutes returned with a few pieces of wood and placed them in front of the flattened tire. He then drove onto the wood ramp until the axle rested on the boulders, satisfied he proceeded to change the tire. When the job was finished he simply drove off the rocks and was ready to continue the journey. It worked very well but I would not recommend throwing jacks away.

As we neared the little village where we had first landed, Mr. Min suggested walking along the shore, there was still another hour or so before the barge would pick us up. After eating our lunch we examined the rocks along the beach and found some excellent specimens of serpentine, biotite and graphic granite, also sea shells and mother-of-pearl. The cliffs showed evidence of movement of the earth by the anticlines and synclines exposed. It was here I decided to teach and continue my research of geology for there were fine examples for study.

The tide was coming in rapidly now and we soon had to climb the cliffs as it chased us from the beach. Promptly at 4 o'clock the barge came to pick us up and we were on our way back to the mainland. The sinking afternoon sun had turned the sea to the color of molten bronze and our gaze turned toward the beautiful picture of nature before us. I wondered inwardly how long this peacefulness would last for just over the horizon to the right was North Korea.

Arriving back in Seoul we were invited to a picnic supper at the home of Sylvia. The generous hospitality extended us in in this American home (in Korea) will always remain an inspiring memory. For the next year we were to spend many happy hours here examining specimens collected, discussing items of interest and enjoying the delicious flavor of home cooked food.

It had been a full day with many varied experiences and I thanked God for my blessings as my thoughts wandered back over the day's trip and those bombed out buildings, reminders of the hell of war.

Wednesday evening found us reassembled at the Hobby Shop and our enthusiasm mounted steadily for we discussed the possibility of purchasing a

Ray Worring explaining an interesting geological formation.

lapidary machine. Sylvia informed us she had several pounds of smoky quartz and amethyst we could have to cut and polish. (The dream of lapidary work vanished during my tour of duty for although the equipment was purchased and received the diamond saw was missing.)

With the excitement of the potentialities of lapidary work we turned our discussion to the field trip for the coming Sunday. This time with the help of Mr. Sung-Uk Kim, Chief Mining Bureau, Korean Government, a trip was planned to another Gold mine area 42 miles Northeast of Seoul.

Since our group had increased in number it was necessary to obtain a 2½ ton truck for the following Sunday. It would be difficult keeping watch on a larger group so a list of names was made; as each one boarded the truck his name was checked. As we started off I briefed the group on what they could expect to find and cautioned them about separating from the main party. Colonels Halladay and Stevens reminded us again about the dangers of land mines. I believe each one of us said a silent prayer before taking off on any of these trips for each one knew there had been heavy fighting in this country and we had read in the newspapers of fatal accidents caused by these hidden explosives.

As we left the City of Seoul we also left the paved road and the dust started swirling thru the truck. There was one bump after another, the screen of dust reminded me of the blizzards back home, our throats were becoming parched, a smile was lost to the uncontrollable conditions of the road. I smile now as it is called to memory but at the time it was most disconcerting and uncomfortable. After a few miles of this we took the canvas cover off and the remainder of that 42 mile ride was done on our feet. The ride was better standing for the countryside became more and more mountainous and picturesque. It was hard to realize that this beautiful peaceful scene was a battlefield such a short time ago.

Three hours after leaving the city we crossed open fields and streams of clear running water. There were no bridges, only small quaint foot paths of twigs over the little streams. The paths were topped with stones and dirt as a covering. We approached one rather wide stream and got out of the truck to insure a safe crossing. After looking the situation over we decided to ford the river—there seemed to be no danger involved for damaging the truck. Soon we came to a little village and the driver stopped for suddenly without warning there was a deep gully just ahead.

From the quaint little village swarms of children, momasans and papasans poured. It is rare indeed for the Korean people to see "rockhounds" and they were fascinated with us as we walked along the river edge breaking rocks. Some of them soon got the idea and helped us—they were delighted when a "speck of gold" would turn up and offered the specimens as presents.

Mr. Kim told us the gold was mined up in the mountains and brought down to the village on "A" Frames.* The ore was then placed in a shallow wooden trough where a wooden water wheel supplied the power lifting a number of heavy logs which were driven up and down crushing the quartz containing the gold.

As we headed up the trail to see the mine we passed the wooden water wheel and watched this primitive method of extracting the gold. The water wheel turned an axle which had spokes protruding from it. The spokes engaged and disengaged themselves in little notches in the logs—thereby causing the logs to go up and down. The up and down motion of the logs crushed the rock. Primitive, unusual and efficient.

After buying some specimens from the mine owner he guided us up the trail to the mine so we could try to find

*"A" Frame—A wooden frame carried on the back and used by the Korean men to carry or transport heavy loads.

some specimens for ourselves. The most prized specimens of any collection are the ones that are dug out by the collector himself. A great deal of the enjoyment of collecting is telling others about the unusual incidents of the adventure. The trail took us up through a small canyon lush with vegetation. It was one of the most beautiful spots I had seen in Korea and Mr. Kim shared my feeling in this when he said "I didn't know my country was so beautiful." At first we thought there had been no fighting here but as old mortar shells and an unexploded bomb were found, no more evidence was needed. From this moment on we walked single file with proper spacing between just for safety. Two men who had disobeyed our warning fell in line and very quietly cooperated. We never again had to go looking for any members of our group who strayed from the main party for the sight of the bomb was enough. I said a silent prayer of thanks that the bomb was seen first!

The hike up the trail was one hour and my sympathy went out to those poor Korean men who carried the ore down on "A" Frames on their backs. How hard this life is for these people.

Colonel Stevens had become very footsore and declared he would go no further up the trail. Rather absentmindedly I told him to "sit there until we came back." Having seen the unexploded mine I was concerned about the possibility of his getting restless while waiting for us to return and exploring the hillsides alone. He did sit however, for when we reached him on the return he was very happily airing his feet beside a clear stream and breaking rocks that were within reach. When we compared specimens collected Colonel Stevens had found the prize just sitting beside that little stream.

The mine was a small tunnel in the side of the canyon wall and about 15 feet from the floor of the canyon. The waste material had built up a sizeable "dump" in front of the mine tunnel. This area was where we looked for specimens. There is a strange thrill and fascination that is experienced when looking for gold. The search for all minerals is thrilling and rewarding but gold is in a place by itself. We did find some specimens outside on the dump but thought it would be interesting to go in the mine and collect some.

The tunnel entrance was about five feet high and four feet wide. There were no timber supports except at the mine entrance. The tunnel went back horizontally for about 20 feet and then a shaft was sunk. At one place a cave-in had taken part of the footwall away and a deep, dangerous hole opened up. They merely dug into the mountain and hoped the tunnel would not cave in.

We descended down the narrow shaft on a ladder that was little more than a notched log. The working face was full of water and very cramped; the hanging wall was broken up by the blasting and presented a danger of falling rock. After blasting, the loosened rock was not secured. Accidents and deaths must have occurred frequently. We managed to bring a few specimens to the surface for those that were not allowed to go inside the mine. Unfortunately there were not many good specimens brought up but it had been interesting to see this unique mining method.

There were not many outstanding specimens collected but the shutter bugs among us had exhausted the supply of

A gold mine in Korea.

unexposed film. Tired as we were there was still another 3 hours of hard driving ahead. We wrapped the few jackets and blankets brought along around us and braced ourselves for the exhausting ride back.

Arriving back home we must have looked like creatures from outer space for the dust had covered each one so completely only the eyes seemed to give a clue to our identity. We were covered from head to toe with dust as though a sack of flour had been dumped on us.

Sylvia had a buffet supper waiting and the tiredness of the day was soon forgotten as we ate and laughed over the amusing incidents.

During the following 17 months we made trips as far south as Suwon, and as far north as the 38th parallel. The club grew in size as stories of our trips circulated. As the interest mounted we decided a course in Geology would be of infinite help. With the cooperation of Army Education Center we had the most successful class ever held. So successful was it that when my tour was up they asked me to either continue with a re-enlistment or assist them in finding another instructor in order to keep the study of Geology on the program. Transportation had become such an issue that Sylvia became discouraged and disheartened—with her spirit broken this way the idea of the Mineral Club was abandoned.

We are proud of the fact that our club was the first attempt of a mineral club on foreign soil. The symbol of the club is a tie clip with a little golden chain hanging from it, attached to the chain is a little wooden dog. Engraved on the tie clip are the words "Korean-American Rockhound Club", 1956. It was designed by Sylvia and was her gift to us on our departure from Korea.

It is my sincere desire that this article will be an inspiration to other Americans in foreign countries to further the wonderful hobby of mineral collecting. Perhaps through God's beauty of nature whether it be plant, fowl or mineral there may come peace and understanding to this troubled world.

New Opal Find in Australia

"Latest news from the opal fields of Australia is that an old Abo (native aborigine) working in an abandoned opal-gouger's shaft, unearthed such a whopping big piece of opal matrix that she had to call on two male members of her tribe to help her gouge it out. When they finally did, they had a lump of solid, precious opal weighing 38 ozs. and what is considered the largest lump of opal matrix in the world—pounds and pounds of it! This from an abandoned opal working!

"A local gem dealer named Sherman paid them £7,000 (seven thousand pounds) for the lot. He estimated that when it is cut and polished and set-up for sale, with sales tax added, the lot should fetch £30,000.

"The Abos promptly went on a binge with their money and were broke within a week!"—letter dated May 5, 1958, from Kelvin Green, YMCA, Pitt Street, Sidney, NSW, Australia.

The Glowing Embers Club!

Editor R&M:

In a recent article about our group, through a typographical error, the boys and girls were referred to as "EMBERS" instead of "Members". We like this so much we are toying with the idea of making an official Pin about ⅜" or ½" across composed of right angled crystals, on one or two of which we can put a little dab of red enamel so that it would indeed look like a glowing "ember".

Some galena crystals look fine when they are bright but they soon become very dull. Someone else has suggested hematite or marcasite.

We are experimenting with black tourmaline. Would pyrite perhaps be even better?

We wonder if you have any friendly suggestions to offer which would permit the boys and girls to mount their own pin.

Willian Guild, Director
Educational Program,
The Science Center
P.O. Box 1118
St. Petersburg, Fla.

(Ed. note—We do hope some of our readers may send Mr. Guild a suggestion or two.)

FULGURITES IN THE MAKING

By M. N. REED

Box 254, Cave Creek, Arizona

"Anything can happen in Arizona!" so say its people. Proof of the pudding is that some few days ago Jim O'Neal, an avid rockhound from Cave Creek, saw "Fulgurites made before his very eyes."

Jim, out looking for interesting rock specimens in the Bradshaw Mountains, was driving leisurely along a mountain road near Cleator when a rainstorm began, a rare thing to happen in Arizona. But, rarer was the fact to be present in the rainstorm and see the lightning make the Fulgurite! Before Jim's very eyes the lightning struck the high voltage power line, then leaped to earth! He got out of the jeep, went to the spot to investigate, and to his amazement found that the lightning had melted the electric wire which falling to the ground had blackened a large patch of earth.

Jim realized that before his very eyes a vitrified, tubular crust of rock had been produced by lightning. "A Fulgurite," said he to himself. As president of the Cave Creek Rockhound Club he felt certain that here was something many members would be interested in seeing for themselves. He would get those who did to examine it in the very spot where it had been made.

"Strange phenomenon," said he later explaining how it had been made, as portions of it were evacuated, and the other rockhounds agreed, as pieces of it were carefully studied. So that other hounds might see this *Fulgurite* it was agreed that several specimens would be shown at the March "Rock and Mineral Show" in Phoenix, and that specimens there would be available by the Cave Creek Rockhound Club.

In the making of a *Fulgurite* when an extra heavy bolt of lightning strikes the ground in certain places it may enter one place and then disperse under the ground into a network of smaller discharges, finally into hairlike discharges. Due to resistance of the ground, the lightning generates great heat, melting most of the matter through which it travels.

The lightning discharge takes place in less than one-ten-thousandth of a second but the heat generated runs over 1800° C., or 3240°F.

The type of *Fulgurite* depends upon the nature of the ground or rock, but it usually has a central tubular cavity, as does this one found by Jim, where the lightning passed, and this is lined with glass due to the melting of the silica in the soil. The cavity varies but frequently is about finger size, or parts of it a little larger as is this one. Around the central cavity for about one to two inches the rock and soil are carbonized and look just like carbon.

Lightning is known to take various routes, thereby making an intricate pattern in the *Fulgurite*. But, in this particular one, there is an added feature. The electric cable which fell added its discharge to that of the lightning. One piece of it therefore has a strand of copper wire melted to its inside cavity.

What makes this *Fulgurite* even more interesting is that it is a rock *Fulgurite*. Sand *Fulgurites* are scarce, but it is rare that rock ones are found except on mountain tops. So, it is indeed true anything can happen in Arizona, and to prove it Jim O'Neal has but to hold up a rock *Fulgurite* which was produced before his very eyes as he was driving along a mountain road.

Plays big part!

Editor R&M:

We never want our subscription to lapse, as R&M plays a big part in our lives as amateur mineralogists.

Mrs. John C. Matter
1050 Anna Rd.
Huntingdon Valley, Pa.

The Quartz Crystal Pocket Discovered on Deer Hill, Maine, in 1956

By B. M. SHAUB
159 Elm Street, Northampton, Massachusetts

Deer Hill is located in the extreme northwest corner of the Fryeburg, Maine quadrangle. It is in the town of Stow, a section of Oxford County. The pegmatite on Deer Hill is often referred to as the Eastman ledge and has been known as a source of an occasional fine colored amethyst; for such crystals and/or fragments have been picked up or dug from the kaolinized parts of the ledge for many years. The color is much like that of the fine reddish purple amethysts which are most highly prized for gems. The crystals of amethyst found at this location, while not numerous, have been found to contain many inclusions, fractures, feathers and other defects which render the material, in general, unsuitable for cutting other than small gems of a relatively few carats each. It is customary for quartz obtained from pegmatite pockets to be rather badly flawed or to have inherited many inclusions of the nearby associated minerals during crystallization.

Prior to the summer of 1956 only a relatively small amount of work had been done by collectors and others on the pegmatite ledge near the top of the hill. In 1956 Phillips Cole of Dayton, Maine obtained a lease from Harry Eastman of Fryeburg, Maine, the owner of the property, to mine feldspar and mica from a relatively large pegmatite which outcrops over an area of several hundred feet in length by a hundred feet in width. On August 1st 1956 while in the process of excavating within the ledge for feldspar and mica, Mr. Cole worked into a pocket filled with kaolinite and quartz crystals, a few of which were of a good amethyst color. The quartz specimens ranged from small individual ones and clusters to specimens up to 14 inches long. Many of the crystals contained numerous small crystals attached to their sides and making small angles with the axis of the larger central crystal. Approximately 1500 to 2000 pounds of crystals were removed from the pocket which was 7 feet long, 4 feet wide, 3½ feet deep and located 22 feet below the surface of the ledge. Other minerals in the ledge are chiefly microcline, muscovite, cleavelandite and beryl. The pocket occurred in a clayey area which had been dug into near the surface by the thousands of collectors who had visited the site during the past century and who were hopeful of finding a bit of Deer Hill amethyst. The area was a favorite for one of Maine's well known collectors—"Uncle" George Howe who made many excursions to the site.

The writer had the opportunity of examining the entire lot of crystals with the exception of a few of the smaller amethyst crystals shortly after Mr. Cole had had the adhering clay removed from them and had laid the lot out on shelves at his home in Dayton where they could be seen and compared. There are a few unusual features that characterized the many individual crystals and groups. The most prominent of these characters is the white porcelain-like surfaces of the rhombohedral faces—or the white caps as they were commonly referred to. Another feature of interest was the many smaller crystals clustered about the main or central crystal as shown in the accompanying illustrations. The small crystals likewise were terminated by the white caps. The white portions of the faces are usually firmly attached to the crystals but occasionally small sections were broken away exposing an earlier surface. Similar white terminations have been noted on crystals of quartz from pockets in pegmatites from other localities in the western part of Maine. The prism faces also received at times a slight and variable deposition of white quartz which appears to have resulted from the oscillation in growth

between the rhombohedrons and the prism faces. In the absence of the white layer the prism faces show the dark color of the smoky quartz which occurs in irregular horizontal streaks or patches between the white areas. The interior of the crystals varies from a light to dark translucent smoky color which renders the crystals unsuited for smoky quartz gems.

In contrast to the smoky quartz crystals, the amethyst occurs in more equant

Photo by B. M. Shaub

An extra nice quartz crystal, 7 inches long, from Deer Hill, Maine.

Photo by B. M. Shaub

A group of quartz crystals averaging 5 inches in length from Deer Hill, Maine.

single crystals having relatively smooth faces. The color, while of a fine reddish violet, is quite unevenly distributed throughout the crystals which also contain a multitude of flaws, inclusions and feathers of many sorts. Only a relatively few small gems can be obtained from the five to ten better crystals although some were three to four inches in length and nearly as thick. Hence it is believed that the amethyst crystals are probably of much greater value as cabinet specimens than to be cut into relatively poor quality gems.

The entire lot of crystals has been turned over to Stanley I. Perham of the Maine Mineral Store at West Paris, Maine who is offering them to tourists and collectors who visit his store.

The history of the Maine minerals of the area adjoining the New Hampshire boundary has been a long and interesting one. The district has been a producer of fine mineral specimens and gems for nearly a hundred and fifty years during which time many fine specimens have been recovered and of these a good representation can be found in many of the mineral cabinets of the world.

Although a few of the mineral deposits of the area have been worked for gems and cabinet specimens alone, most of the discoveries of fine crystals and rare minerals have been made in the many pegmatites which were being worked for mica and feldspar. However, in a few instances the rarer minerals have been the object of exploration and mining activities. In following the normal mining pursuits for the commercial minerals it is not infrequent that pockets containing fine mineral specimens or gem quality minerals are recovered as by-products.

It is indeed a pleasure to put on record some of the data concerning such discoveries and to call the attention of the many collectors to the fact that from time to time new specimens of minerals become available for their cabinets. Without the new material supplied by the prospectors and miners from world-wide occurrences our superb hobby of collecting minerals would lose much of its keen enjoyment.

VISITING ROCKHOUNDS WELCOME

The following subscribers would be delighted to have rockhounds call on them when passing through their cities. If any one else wants his name added to the list, just let us know.

Mac & Maggie McShan, 1 Mi. west on Hy. 66, Needles, Calif.

Randall Bohmer, 208 Warren St., New Britain, Conn.

Mrs. John Branch, 3820 Ridge Ave., Tampa 3, Fla.

Maurice Lamb, Niota, Ill.

Susan Tranter, 2 E. Walnut, Sharpsville, Ind.

John Burmeister, Preston, Iowa

Mr. & Mrs. Toivo Puranen, Ellis Rd., RFD 2, Box 67, Westminster, Mass.

Rev. M. Everett Corbett, Acworth, N.H.

James B. Moore, West St., Antrim, N.H. Phone 154

Burl H. Van Dyke Rt. 1, Boone, N.C.

Mrs. Daisy Lynn, 204 E. Dalton, Hugo, Okla.

Edward Helpenstell, 1429 Sandpiper Dr., Houston 36, Texas

T. Nichols, Rt. 4, Bowie, Texas

V. Sabin, 723 Steves, San Antonio 10, Texas

Herman Kraege, Lima Center, Wisc.

A VISIT TO ALMADEN, SPAIN

By JOHN F. JEDLICKA
7212 Stratton Way, Baltimore 24, Md.
and CHARLES PELLETIER-DOISY, Marne, France

During April 1957, Charles Pelletier-Doisy and I toured the greater part of Spain before turning towards his home in Nice, France.

We consider our brief visit to Almaden, one of the world's classic localities, as one of the highlights of our auto trip that began at Rabat, Morocco and culminated at Nice, France.

Thus far, I have written two articles describing our visits to Moroccan localities. This time it is Charles' turn.

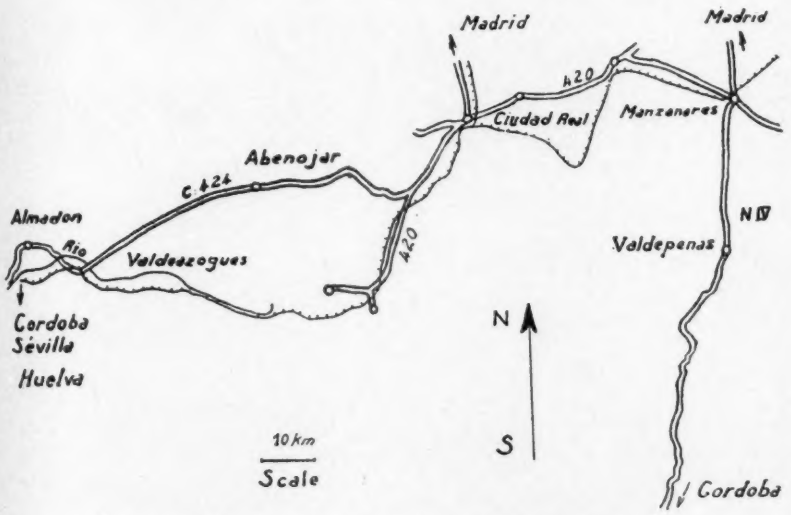
Almaden is one of the most ancient mines in the world, since its history can be traced back to its first exploitation at 315 B.C. After the Romans, the Arabs worked the deposit and gave the town its name, Almaden, which in Arabic means, "the mine."

Soon after the discovery of America, the quicksilver of Almaden was sent to Peru to be employed in the gold and silver mines, thus greatly emphasizing the importance of this small town.

Even now, Almaden is still the first producer of quicksilver in the world. The yearly production rounds 42,000 flasks, the greatest part of which goes to the U.S.A.

To visit the mine, one needs an authorization from the Minister of Hacienda (Finance), who has the mine under his authority.

Almaden is located about 140 miles southwest of Madrid. To reach it, we turned left off the main road, running from Cordoba to Madrid, at Manzanares. In about forty minutes we reached Ciudad Real. After passing through that town, where Cervantes lived and which is the capital of the Province, we motored along a narrow road for over 50 miles. The country appeared to be sparsely populated and we passed through just a few small villages. On our left we observed a long and continuous crest made of Silurian quartzites. The road, itself, ran on folded shales. About ten



Map showing location of Almaden in southern Spain.

miles before Almaden we crossed a small granite batholith.

We arrived in the town of Almaden at noon and after some difficulty (neither of us spoke Spanish) we were able to locate the Directory Hall. We were introduced to Don Gallego, Director of the mine. He instructed a guide to take us to the mine office and introduce us to two young, Spanish mining engineers. They were to show us the surface works, but not the underground workings as we did not have a special authorization from Madrid.

Using a mixture of "Franco-Spanish" they soon acquainted us with the interesting aspects and peculiarities of the mine.

A peculiar feature of the mine of Almaden is the fact that each miner works twelve hours per week and a total of only eight days per month, due to the unhealthy sulfurous fumes. Of course he gets paid as if he was working full time. All the miners must be recruited at Almaden itself and at the age of twenty a young man of Almaden can claim to be employed at the mine as his right. There are at this time 2500 miners employed at the Almaden mercury deposits. The mine also owns a big domain of about twenty thousand acres, a third part of which is divided among the miners so that each man has his bit of land to work on and "purify his blood of the drops of mercury which may have got in."

From our discussion and the charts and diagrams shown to us, we gathered that at Almaden there are four types of rocks:

(1) Bituminous slates containing pyrite.

(2) Fine grained quartzites grading to micaceous sandstones.

(3) A kind of rock called "frailesca", which is a breccia filling a fault zone. The constituents of this breccia are quartzites or diabases.

(4) Diabases which occur irregularly in dikes, cutting the slates along fault lines.

According to the opinion of geologists, who are working at Almaden, the mineralization is an impregnation of porous quartzites by cinnabar. There also has been replacement of quartz by cinnabar.

The deposit occurs in three vertical zones inside the quartzite, parallel to one another and running from east to west. These zones are improperly called veins, but as it is the term used at Almaden, we use it here.

The most important zone is the San Pedro y San Diego Vein. It is 10 meters thick and is the richest in the deposit. It averages 6% mercury and in certain places 20%. The ore is very hard and owes its red color to its high content of cinnabar.

The San Francisco and San Nicolas Veins are three meters distant from one another and are exploited together as a single zone would be. The percentage of mercury is 2 to 3% at San Francisco and 1% at San Nicolas. The ore is grey with reddish marks at San Francisco and black at San Nicolas.

Each zone extends about 500 meters and is limited at its eastern and western ends by a fault. The extraction is made through two old shafts which have a rectangular section. A third and modern shaft is now being installed and will increase the daily ore evacuation by some three hundred tons. The exploitation in depth is between the levels 361 and 411 meters.

In 1956 the production was 55,000 tons of ore and 1,450 tons of mercury.

After having been given these explanations in the mining office we made a complete visit of the surface installations. We saw how the ore is crushed and carried to the furnace where it is roasted. Chemically this happens:

$$HgS + O_2 \rightarrow Hg + So_2\nearrow$$

The vapors of mercury condense in metal coils and we observed the mercury falling drop by drop in basins. It is carried away through lead tubes to a building where it is put into flasks.

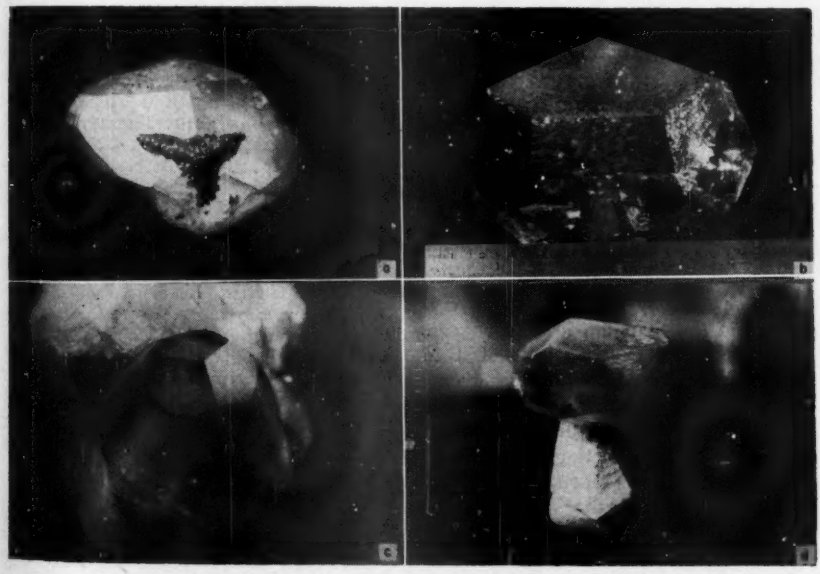
Our Spanish friends then presented each of us with a specimen of cinnabar and a small glass vial of mercury and without further adieu we left Almaden and continued on through Spain.

LARGE CALCITE CRYSTALS FROM STAUNTON, VIRGINIA

By WILLIAM F. GIANNINI, Howardsville, Virginia
and W. CULLEN SHERWOOD, Rt. 1, Fairfax, Virginia

Some unusually large and well developed calcite crystals are found at Staunton, Virginia. These collectors items occur in the Beekmantown limestone in the quarry owned by the Belmont Rock Company near the eastern city limits of the city of Staunton on State Route 250. The best crystals of calcite are exposed on the wall at the southeastern end of the quarry which is approximately 300 feet long, 100 feet wide and 100 feet deep. The best occurrences were found to be associated with rounded vugs, horizontal fractures, and bedding planes. These were probably formed by folding and subsequent enlargement by solution. At one point the authors received a pleasant surprise, when on investigating a small opening on the face of the quarry a 2 foot vug was discovered containing 4 inch long specimens of dog tooth spar.

The crystals range from microscopic size to more than six inches parallel to an *a* crystallographic axis. Both the large and the small specimens exhibit extremely well developed crystal forms. Other outstanding features of particular interest to the mineral collector are the wide range of colors and impurity affections displayed by specimens collected from this quarry. Crystals range from clear to practically opaque dark gray. Very clear varieties occur as small whole crystals and as cores for some of the large crystals. This would seem to indicate an early position for the clear material in the deposition sequence. Also exhibiting very little impurity and color is a paraffin-like calcite ranging from colorless to light yellow. This type commonly occurs as "wings" which appear to have been deposited in crystal-



Calcite crystals from the Belmont Rock Company Quarry, Near Staunton, Va.

lographic continuity as extensions on the rhombohedron faces of many of the larger crystals. In some specimens this yellow coloring (due to iron oxide) becomes so concentrated that the crystals are nearly opaque. A reddish brown iron oxide coating also occurs on many of the crystals faces. In some instances clear calcite has been deposited in crystallographic continuity over clay or iron oxide coatings causing a phantom crystal effect. Pyrite inclusions (shown in Figure 1a) in many instances are controlled by the calcite crystalline structure and form patterns which are quite interesting.

The different types of calcite collected from this locality include short prismatic forms terminated by rhombohedrons, dog tooth spar, and Iceland spar. The most common variety is this first type, which occurs as flat crystals exhibiting large, modified, obtuse rhombohedron faces with small prism and scalenohedron forms. The occurrence of dog tooth spar appears to be rather limited since the authors found this variety only in the vug previously mentioned and as very small disseminated crystals in fractures. Iceland spar is extremely scarce. Some calcite exhibiting the property of double refraction occurs as the core of larger crystals indicating an earlier stage of deposition of $CaCO_3$ for these that was free of impurities.

The common basic forms observed on the crystals are rhombohedrons, scalenohedrons, and prisms. The negative, modified rhombohedron O112 (best illustrated in Figure 1c) was present on the majority of specimens collected.

The availability of good calcite crystals from the Staunton locality appears to be unlimited. Each recent blast in the southeastern portion of the quarry where the majority of the crystals occur has served to expose a profusion of specimens worthy of collecting. In order to be assured of an extremely beneficial collecting excursion, the owner of the quarry, C. W. Lawrence and Sons, Staunton, Virginia, might be contacted regarding the date on which they plan further development of that portion of the quarry. Mr. Lawrence welcomes interested visitors.

The writers would like to acknowledge the following persons who were helpful in the preparation of this article: Dr. Richard S. Mitchell, Robert K. Peare, and John B. Ramsey, Jr.

Description of the Photographs

Figure 1-a. Pyrite "star" on rhombohedron (1" across). b. Large rhombohedron and prism with iron staining. c. Scalenohedron terminated by modified rhombohedron (2" high). d. Scalenohedron and rhombohedron, oriented parallel with mutual *c* axis (1" high).

FRANK DUNCAN FUND

In the Sept.-Oct. and Nov.-Dec. 1957 issues of R&M there appeared articles relating to Frank Duncan Fund. (Mr. Duncan is an aged mineral dealer who is up against it financially). We had hopes of raising $500 to be sent him as a nice Christmas present.

Only $185.10 were raised and this was sent him, Dec. 16th—not as a gift but as a loan (at his request).

Since then $51.00 more has been received, as follows:

Francis D. Emery, Old Orchard Beach, Me.	$5.00
Roy M. Fitts, Yarmouth, Me.	2.00
Fran Schiller, Luke, Md.	2.00
Mrs. John J. Tamburri, Morganville, N. J.	2.00
Robert Wilken, Red Hook, N. Y.	2.00
Anonymous (Ohio)	10.00
Mrs. Richard Fischer, Grand Junction, Colo.	10.00
Anthony Thurston, Morningdale, Mass.	2.00
Sheila Ann Gerhart, Reading, Pa.	2.00
Bob Hayley, Seymour, Texas	5.00
Mrs. Joe Sheriff, Shell Lake, Wisc.	1.00
Kenneth Parkinson, Hull, England	5.00
Juan Montal, Vilafranca del Panades, Spain	3.00
Total	$51.00

We will hold the Fund open for a few weeks in the hope that more contributions may be received.

Readers, if they so desire, may send their contributions direct to Frank Duncan, P. O. Box 63, Terlingua, Texas.

THE AMATEUR LAPIDARY

Conducted by Captain George W. Owens

Hq. Sq. 384th Bombardment Wing, Little Rock Air Force Base, Jacksonville, Arkansas

Amateur and professional lapidaries are cordially invited to submit contributions and so make this department of interest to all

MORE UNUSUAL STONES

Collectors' items in faceted stones need not be large in size or of perfect material to be valuable. Often stones of very small weight command a handsome price. This is because of the rarity of the stone and not due to the craftsmanship in the cutting. Some materials sought after by collectors just do not come in large chunks or crystals and the few large stones that have been cut in these materials generally are to be found in museums rather than in the hands of private collectors. So do not overlook a rare item just because it happens to be small in size. It may be your only chance to add that particular variety to your collection. Several years ago I picked up half a dozen very small dioptase crystals from an old collection that was being offered. Not realizing at that time that these crystals were very difficult to obtain, they were given away. Needless to say, no more dioptase XLS have been added to the collection despite diligent searching and many letters to collectors and dealers.

The stones listed in this article fortunately are not as rare yet many of them do not appear in our collections. They are available, both in the rough and as finished gems, to us all and are worthy of consideration. Several present cutting problems but everyone can produce a nice stone if they exercise a little caution and care.

Pyrite: Iron disulphide. Common jewelry name is Marcasite. Can be and is found in all parts of the world. Color generally some cast of yellow. Used in a considerable amount in commercial jewelry with the majority of the cutting being accomplished in Germany. Its hardness of 6 to 6.5 makes it a good stone for such use. It is an easy stone to cut en cabochon, but polishes slowly with Linde A on tin when faceted. Angles are not important as the stone is opaque. Very few collections have a good faceted pyrite, probably because the material is so common that it has been overlooked as a gem possibility. The slow polish indicates that there is a better method to be discovered and the suggestion is made that a very weak nitric acid solution may help. Will some good stone cutter make a few experiments and let us all in on the secret?

Obsidian: A natural glass. All colors, which are generally of dull tones. Vivid blues, reds, and yellows, etc. such as are often seen in collections are undoubtedly man-made glass. Quite a hassle over this sort of thing took place several years ago. I have no intent to revive the argument. Natural obsidian is used in the making of many ornamental objects and extremely large stones may be cut from this material. Polishes with ease using Cerium Oxide on felt or lucite. Angles not too important. Those for quartz give nice results. Some interesting gems may be fashioned using the variations in coloring or by cutting the culet in a band area. A common stone and one which may be found in most collections, yet faceted stones are seldom seen. Some obsidian contains small vugs and crystals of various minerals usually too small to be observed but now and then of fair size. A cabochon cut to display such an occurrence is most interesting. Obsidian is also extensively used to cut spheres and other ornamental objects. Some of them are very beautiful, especially those made from iridescent material.

Epidote: A hydrous silicate of calcium and aluminum with ferric iron. Usually a yellowish-green but may be brown or black, etc. Flawless material is most rare. Crystals of faceting quality have been found in Germany, Italy, Norway, Brazil and Madagascar as well as other foreign places. North Carolina has produced some cutting material and beautiful specimens. Very limited amounts have been recovered in San Diego County, Calif. Also there is a source in Northern California, near the town of Quincy. Material recovered here has been faceted and remarkably clear stones were obtained. Mr. George Curnow of P. O. Box 896, Chester, Calif. has several specimens of this fine material. A query to him may help you locate a source for cutting grade epidote. It fashions readily and polishes with ease using either Linde A on tin or Cerium oxide on lucite. Both mains of 39° give a nice stone. Epidote does have a perfect cleavage and the usual precautions must be taken. A stone of any size is a welcome addition to the collection. Extremely large stones just do not exist. Be satisfied with one of under one carat weight.

Hematite: Ferric oxide. A steel gray to black. (Limonite is brown). Good gem material not as common as may be supposed. If you have never cut one of these, try it. Makes very interesting cabs and is also faceted, usually only the crown portion. Often seen in jewelry stores where intaglios are popular. England, Norway and Sweden supply most of the gem grade rough but some has been recovered from the Lake Superior District in the states, and in Arkansas. Angles of cut are not critical as this material is opaque. Cerium Oxide on felt or lucite will polish cabochons. Linde A on tin gives a fine polish for faceted stones. No caution was found necessary in working solid material as it had little reaction to either heat or shock. Makes an odd addition to the collection. A single representative should satisfy most of us unless cut as an intaglio, where the design possibilities are numerous. Simple intaglios are not beyond the capabilities of anyone and they are very interesting to make. Try one sometime.

Jet: Largely carbon (fossil coal?), black. England, Spain, France, Nova Scotia, USA (Colorado, Utah, and New Mexico). Amorphous Whitby jet from near Whitby, England is considered the world's finest. Jet, very popular around the turn of the century, has practically disappeared from the American market due to so many cheap imitations and the unethical use of the name. The great buying public is mostly uneducated when it comes to the various gems, (witness the ready sale of glass and synthetic junk which often commands a higher price than true gems), and were so consistently taken in on substitutes that sales of jet have declined almost to the vanishing point. Jet is still popular in England and Europe. Good specimens are hard to find here in the States and but very little is in the hands of amateurs. The Colorado and Utah material is not too good but does appear on our market from time to time. A fine cabochon or semi-faceted jet is missing from the great majority of our collections. Quite a few collectors do not even know the stone since they have never seen one. The author was fortunate enough to obtain several fine pieces of Whitby jet this past year. These were fashioned with flat, polished backs and faceted tops. Some were undrilled beads. The two finest and largest pieces were added to the collection and the balance to the trading box. Anybody need a good specimen of jet?

It has a hardness of only 3 to 4 so it is not suitable for rings but does make fine earrings, etc. It is interesting in that it has the odor of burning coal when gently heated. It has been found in the form of tree branches and also as fossil fish. Lumps of jet occur in a shale known as "jet-rock". The English jet nodules are covered with a "skin", either blue or brown colored. This fact identifies the rough from all other jet rough. It may be worked with a common file, a knife, sandpaper, etc. It polishes readily on leather or felt. Tin oxide, cerium oxide or Linde A gives a nice stone. Angles are not important. Number of facets not

important. In addition to sources previously mentioned an occasional piece of fine jet is found around Santa Fe, New Mexico. This material rivals the material found in Spain and while it is the best found in the States it does not equal that from Whitby, England. Other than the few pieces in my trading box, I know of no source of good jet in this country. It may be that a piece or two could be located in some of our antique shops. Mr. Dick Mitchel of MDR, 4853 W. Jefferson Blvd., Los Angeles, Calif. at one time had some nice rough jet that would yield modest sized stones. It may be that he still has a few pieces.

Everyone should add at least one representative piece of jet to their collection. Why don't you start today to acquire one? It has a most interesting history and with a little research at your local library can easily become quite a bragging piece. This, together with the fact that so few of us have a specimen, should start you out on a collecting trail immediately.

Staurolite: Hydrous silicate of iron and aluminum. Transparent to opaque. Yellowish brown. (Cross-stone, Fairy-stone, or Twin-stone). Interpenetrating twin crystals which form a natural cross. Staurolite is found in Switzerland, France, Brazil, New England states and also New Mexico. Cross-stone found in Georgia and Virginia. Both types much sought after by collectors. The clear Staurolite is generally fashioned in a mixed or step cut while cross stone is not cut but used as a curio, sometimes one XL end will be capped and the cross suspended from a chain. Faceted Staurolite resembles a brown chrysoberyl when at its best color. Only a few stones in collectors' hands. I have never seen but one faceted stone. According to the RI, 39° mains should result in a nice stone. Polish may be obtained with Linde A or cerium oxide on tin or perhaps lucite. Its hardness of 7 to 7.5 indicates that it will react to standard faceting procedures. Anyone who has any translucent to transparent Staurolite should try faceting a stone. This column is open to any word on this subject. It may be that despite indications, none of the usual faceting steps will work. Please try to let us know the results, or share a bit with me and I will try my hand at it. Here is one stone we have all seen, generally as Cross-stone, in collections, yet how few of us have ever considered faceting it, or mounting it in some fashion?

In the next column it is planned to discuss cabochons entirely, while some or all of the material may be used to facet, only the cabochon aspects will be covered. Agate will not be discussed. Odd and unusual materials will be presented. Anyone desiring to bring any specific type to the attention of the faithful few who read these words is most cordially invited to send in a sample slab and fashioned stone with the particulars. List source, fashioning method, and a general description. Material will be returned if requested. Please do not send any of the jasper-quartz family unless it is a most unusual item.

When writing any firm or individual mentioned in this column, please be so kind as to say you saw it here, in ROCKS AND MINERALS. If you enjoy the tales I tell, this favor will be a kindness.

List of Virginia Publications and Maps.

A 38 page list covering geological and mineralogical publications and maps on Virginia. Issued by Division of Mineral Resources, Box 3667, University Sta., Charlottesville, Va.

Subscription for a young prize winner!

Editor R&M:

I would like to enter a subscription to R&M for my son, Kenneth J. Stewart, R.D. 4, Seneca Hill, Oswego, N.Y.

Kenny is 7½ years old and was the recent first prize winner for a rock collection in his 2nd grade class at Minetto Union School.

Ann B. Stewart
Oswego, N.Y.

THE MICRO-MOUNTER

Conducted by Neal Yedlin—129 Englewood Drive, New Haven, Conn.

The success of the Eastern Federation convention at Asheville, N. C., and the enthusiasm exhibited by those in attendance prompts us to discuss the collecting of micro-mounts there, and the description of some in our own collection.

The first time we visited North Carolina for minerals was in 1936. Hans Engel, of Clifton, N. J. was our companion, and we set off on a tour, visiting Spruce Pine, Bakerville, Hawk, Little Switzerland, Boone, Mt. Airy, etc. Since we resided in Brooklyn, N. Y. at the time, the first leg of our trip was by train to Clifton, N. J., to meet with Engel. We left N. Y. equipped with new mineral pick, chisels, camera and a new hat. We arrived in N. J. minus the hat. It had been 12 years since we had worn one and habit was our undoing. The chapeau remained on the parcel rack of the Erie R. R. train. For all we know it is still there.

We started south (Hans had a new "Graham", and the entire trip was done at 40 MPH.) our first destination, via Sky-line Drive, Spruce Pine, N. C., the promised land.

We need not go into the mineral productivity of North Carolina. From the point of view of the collector this state ranks among the most prolific in the production of mineral specimens. Museums throughout the world are full of them. And so many are still available.

Let it be understood that we were not collecting m/ms at the time (1946 was the beginning point for us in this phase of mineral collecting.) and it was years later that we went over the minerals gathered on this trip to see how many cabinet specimens could be smashed up to obtain m/ms. (Don't wince.) Very few, for most of the material we gathered was in large masses or xls. (Epidote, gummite, uraninite, clarkeite, samarskite, euxenite, monazite, hyalite, beryl, autunite, torbernite, mica, feldspars, columbite, etc., etc.) But there were some, and we here list and describe m/ms from North Carolina, collected at that time, and some acquired subsequently.

ANATASE—Brooks Farm, near Lattimore. An isolated dark blue xl on muscovite. Tetragonal, acutely octahedral. The anatase is transparent and is typically striated. This xl is almost identical to those from Switzerland and France.

AUTUNITE—

1. Spruce Pine. From the collection of the late F. I. Allen of New York. Brilliant yellow rosettes of stubby xls. Extremely fragile, for the spar on which they are implanted is almost completely kaolinized.

2. Pine Mt. Mine. Tabular isolated xls on feldspar. Very thin plates. Minute prism barely visible.

3. Green Mt. Mine. Crusts of clear yellow thin tabular xls, almost schistose. With single green torbernite xls parallel to the autunite.

BERYL, EMERALD—Crabtree Mt. The granite is loaded with xls of this mineral. The specimen before us is prismatic, with base. In a sugary quartz matrix. Not smooth and of gem quality, but beautiful, none-the-less. Some of the xls are bi-colored, deep green at one end and yellow at the other.

CLARKEITE—Fields Mine. Yancy Co. This is a taffy colored and textured mineral, which in this mount is a core of a small xl, originally uraninite. Now, surrounding the core, are orange gummite, yellow uranophane and spots of black uraninite. The xl is not complete,

but is most interesting in that it shows the several stages of alteration. Flakes of muscovite are in contact with the uranophane.

EPIDOTE—Fanny Gouge Mine. About 25 individual prismatic xls, terminated, are scattered about the albite. These are deep green, transparent and gemmy.

GAHNITE—Avery County. Flattened emerald green xl in muscovite. This type of occurrence is quite common in North Carolina. With the profusion of pegmatites and accessories any muscovite should be carefully scrutinized for inclusions. They make superb m/ms. Outstanding flattened included minerals are the:

GARNETS—

1. Micaville. Distorted almandite xls growing between mica plates. These are gemmy in quality, and quite perfect, tho extremely flat. A section of muscovite with included garnets, when inserted in a 2" x 2" slide mount and projected, becomes one of the most spectacular of mineral showpieces.

2. Almandite. Spruce Pine. Bright red gemmy xls, in albite. Combination of dodecahedron and trapezohedron. These xls are perfect, and might well be used to illustrate the textbooks. These transparent gems against a white background make a superb exhibition piece.

HEMATITE—Fanny Gouge Mine. In a vug lined with white feldspar xls the hematite occurs in minute hexagonal blood-red plates. These are so thin that light is easily transmitted, and hence the color. The tiny scales completely coat the albite xls. Epidote in prismatic xls is associated.

MONAZITE—Alexander Co. A clear quartz xl, showing a distinct phantom, has embedded in it, apparently resting on the phantom, a xl of monazite. Light brown in color, transparent, it seems a perfect cut gem submerged in a sea of ice.

MUSCOVITE—Brooks Farm, near Lattimore, Cleveland Co. This is the best muscovite we've ever seen. Pale tan in color the specimen is composed of a jumbled mass of perfect monoclinic xls. They are pseudohexagonal in form and peculiarly are more transparent thru the edge along the A or B axis than thru the thin table along the C axis. It is in this material that anatase, rutile and ilmenite are found.

PYROMORPHITE—Silver Hill, Davidson Co. Grey xls in clusters in vugs. The individuals are compound prismatic, with simple basal pinacoid termination. Translucent. Some prisms are steeply tapered, ending in points. An old locality, with definite possibilities.

QUARTZ—Lincoln Co. Capping a xl of white quartz, and showing typical sceptre growth is a terminated xl of deep amethyst. The white quartz has inclusions of a dark mineral, perhaps manganese, which seem to be droplets running in "dotted lines" from the surface of the xl to its center. The amethyst, too, exhibits this. Color fine purple. Form, normal plus and minus rhombs, forming a pyramid, with a very narrow prism.

RUTILE—

1. Alexander Co., Capilliary xls in quartz. Golden needles. When examined closely each needle is seen to be striated and to have definite termination.

2. Mitchell Co. Geniculated xls, crossing at 60 (or 120) degree angles to each other. A bright red latticework.

3. Alexander Co. A long prismatic xl, doubly terminated. One end shows geniculation, making the specimen look like a feathered arrow. Xls of this type have been found loose at the locality and were sifted out of the sand.

4. Alexander Co. Tetragonal stubby xls on the surface of a quartz xl. These are ruby red in color. Each rutile penetrates the surface of the quartz so that half the xl is exposed.

5. Alexander Co. Red geniculations on beryl. Each xl is terminated. Philip Cosminsky was the donor of this specimen. The red rutile on the blue-green beryl provides a beautiful contrast and makes this a unique mount.

SPODUMENE—Hiddenite, from Hiddenite. Purchased from H. Ford in N.Y. and Scott Williams in Arizona. We are lucky to have 8 mounts of this rarity.

Some are in matrix. Some are loose. All are brilliant green, brighter than emerald. Typical of practically all spodumene gems, the hiddenite is etched. Some are so pitted that they lose their xl identification. Others show comparatively little etching and illustrate well a monoclinic xl. The mineral has strong pleochroism and by sighting thru it along the long axis the color is enhanced considerably.

TORBERNITE—

1. Green Mt. Mine. Rather thick square tabular on decomposing feldspar. Several deep green isolated xls appear on this mount in haphazard arrangement on the matrix.

2. Green Mt. Mine. Here the flat xls are piled one upon another, retaining, however, their individualism. Take a handful of soda crackers, put them on a plate and stir them. The final result will simulate this mount.

3. Green Mt. Mine. Here the flattened torbernite xls are in parallel with tabular autunite. The latter runs rather more symmetrical in arrangement. We think that the torbernite was deposited first, for altho both contact the matrix, the autunite also covers, in some cases, the green mineral.

ZIRCON—Rutherford Co. Eleven loose xls. Clear to light brown. Gemmy. The xls are doubly terminated and are identical to figures 912 and 914, page 610, Dana's "textbook of Mineralogy" (Ford) 4th Ed. 1932.

These, then, are but some of the minerals of North Carolina suitable for micro-mounts. Our trip at the time produced many things too good to break up, or exhibiting characteristics obvious in the hand specimen. Western North Carolina is rock country, and where there's a rock there's a micro-mount.

———

Every day we learn something. Norman Pendleton sent us a group of m/m specimens for examination. On the trip from California the container was badly smashed. But not one specimen was damaged. The trick? Easy. Wrap each specimen in tissue, as usual. Then take this paper bound m/m and again wrap it, this time in a 3" square of aluminum foil, which absorbs all the shocks of handling. Try it. And don't wrap the foil too tightly.

Additions to Jim Palmer's notes about the Majuba Hill, Nevada locality. From Horace A. Greene, Baltimore: Copper pseudomorphs after azurite. Harold Levey, Baltimore: Jarosite. Norman Pendleton. Santa Cruz, California: Silver, pyrite, fluorite, and bornite. How do you like that for diversification? Truly an interest from coast to coast.

Invitation from subscriber!

Editor R&M:

Have talked to many subscribers of R&M and we all feel that the magazine would not be the same without your personal supervision but we believe you deserve a good rest after the many years of work. Why don't you take off a few days and pay Toledo, Ohio, a visit?

C.O. Gettings
2001 Starr Ave.
Toledo 5, Ohio

Wants to exchange or correspond!

Editor R&M:

I sometimes wonder if the folks listed in Collectors' Column send in their names just to have other people see them? I have written to quite a few but nary a one has answered. Don't they want to exchange or correspond? If not, then why are they listed?

Jean Sigles
Lake Rt. 1, Box 26
Chatsworth, Calif.

METEORITE CUTTING

Here is an article concerning the cutting of meteorites at the Smithsonian Astrophysical Observatory. It was sent to R&M by R.N. Perry, Jr., Public Relations Department, Norton Company, Worcester 6, Mass.

Because of the current interest in entering and leaving outer space, Mr. Perry feels that this article may be timely and interesting to our readers,

The popular song about catching a falling star is pleasant to listen to even if the message in the lyrics isn't very practical. A falling star, or more correctly a meteorite, would be dangerous to catch, even if you could. Meteorites are particles of matter which strike the earth after journeys through outer space at speeds estimated to be as high as 45 miles per second. They begin to burn up because of the heat of friction when they enter the earth's atmosphere. Ablation is the technical term for the loss of material during this burning-up process. Large meteorites strike the earth with greater velocites than small ones so that the rate of ablation is higher for the larger ones. However, the size of a meteorite before entering the atmosphere cannot yet be estimated reliably from its final size on the earth.

The people at the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, would like to catch a falling star. Their more practical wish is to find someday a photographic record by a meteor tracking camera of a blazing meteorite fall. Dr. Fred L. Whipple, Director of the Smithsonian Astrophysical Observatory and Professor of Astronomy at Harvard University, directs an extensive program to photograph the trails of meteors. Meteorites are far less common than meteors which can be seen on many clear nights.

Dr. John S. Rinehart, Assistant Director of the Observatory, heads a project studying meteorites so that man may know more about his own planet. Meteorites, according to a present theory, may be parts of small planets called protoplanets which once had orbits between those of Mars and Jupiter. Some forces, perhaps a collision, caused them to break up. Some pieces which have been found are completely metallic. Others may resemble ordinary rock to the untrained observer.

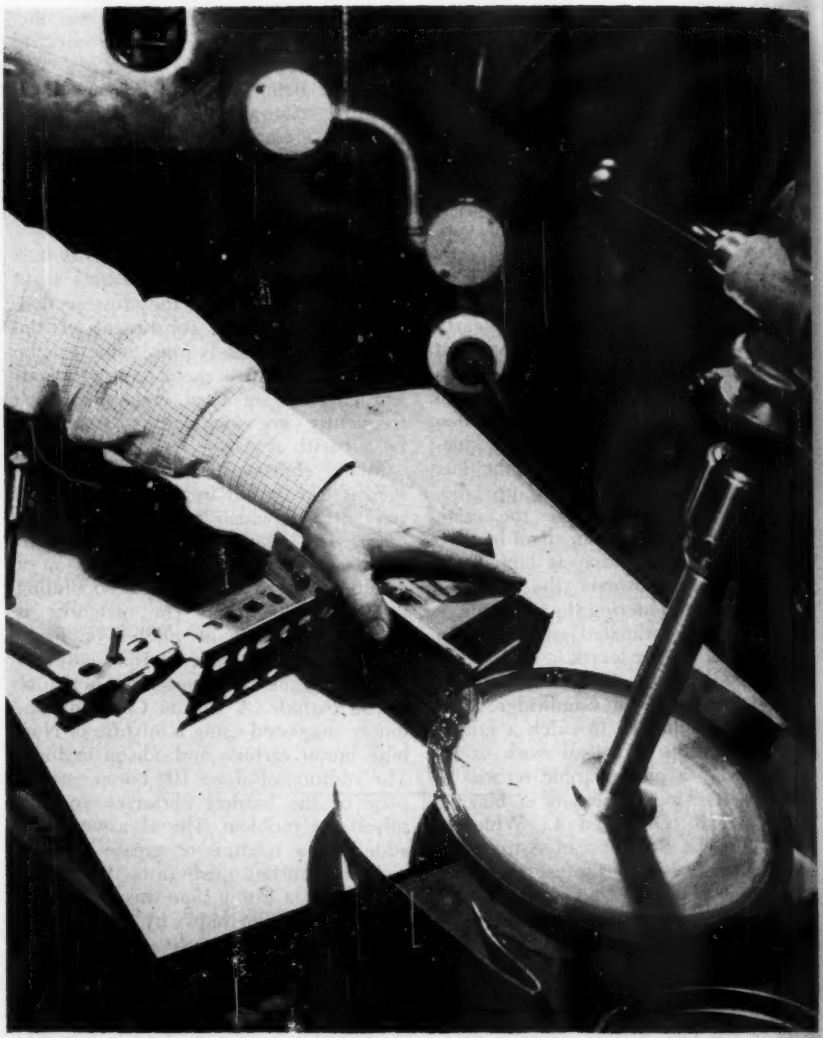
Dr. F. Behn Riggs, Jr., is one of the research team of the Observatory who is directly concerned with the analysis of meteorites. His work is done at the Gordon McKay Laboratory of Harvard University where the most modern scientific equipment is available.

Beginning with the meteorite as it is found in the field, he first cuts it to permit examination of the cross section. The most common constituent of the metallic meteorites is iron. Some can be readily cut with a metal cutting bandsaw. Because of hard materials which frequently are included, others must be cut with abrasives.

When abrasives are used, the specimen is usually cut by means of a sheet steel disc to which fine silicon carbide abrasive in a suitable vehicle is applied by hand. The disc is mounted on a spindle held in a drill press, operating at about 120 r.p.m. The meteorite is held in a matrix of plaster of Paris.

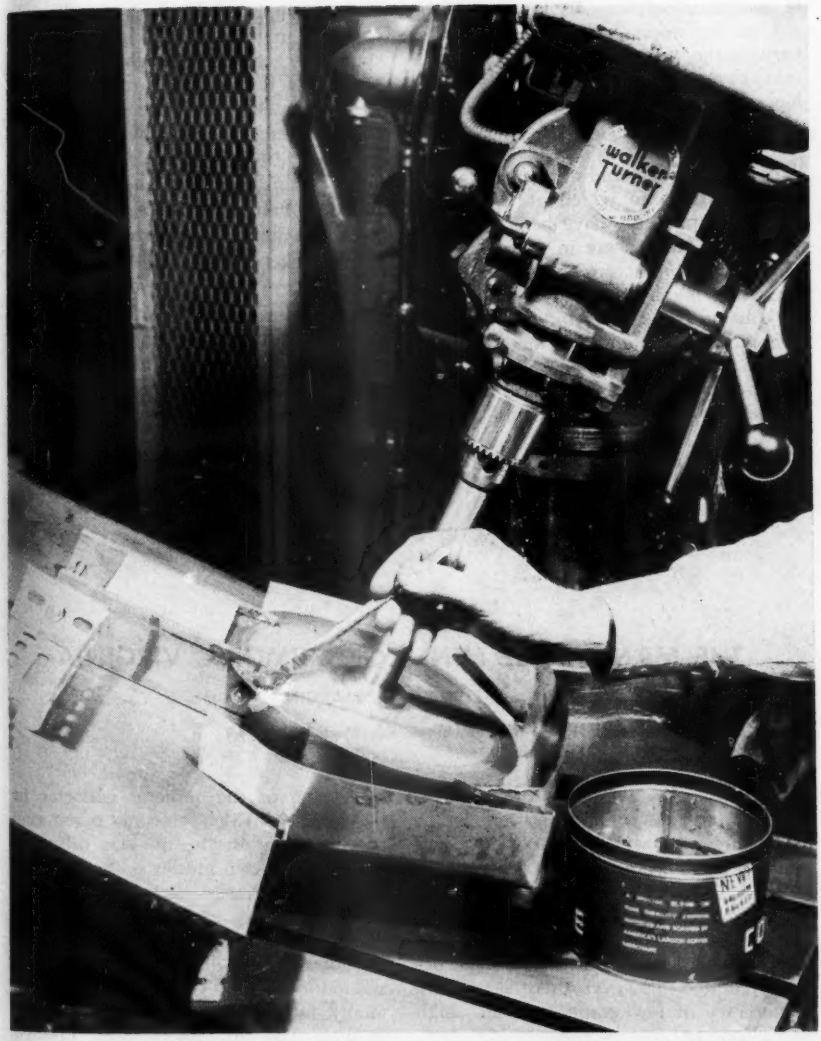
One meteorite examined recently resisted even the abrasive cutting action of silicon carbide. A Norton Company engineer suggested using a mixture of Norbide boron carbide and silicon carbide. The addition of about 10% boron carbide (one of the hardest abrasives known) solved the problem. The abrasives were added to a mixture of grease and oil to form a cutting medium of the proper consistency. Cutting time was about four hours . . . slow perhaps by commercial standards, but purposely slow to avoid bending the thin saw disc with too much force between the disc and the work. A thicker saw would waste too much of the valuable specimen. After a few billion years, what's four hours to a meteorite!

Once the meteorite is cut, Dr. Riggs prepares the cut surface in the manner of any metallurgical sample. The surface



Photos from Norton Company, Worcester, Mass.

The first step in studying a meteorite is cutting it to obtain a cross section. At the Smithsonian Astrophysical Observatory project in Cambridge, meteorites which are too tough for a band saw are cut with a galvanized steel disc and loose abrasive. The cutting medium consists of 90% silicon carbide and 10% Norbide boron carbide (both 240 grit) suspended in a mixture of grease



and oil. The disc rotates at 120 r.p.m. The meteorite being cut is embedded in the block of plaster of Paris clamped in the holder. The weight of the work, acting about a pivot, bears against the saw because of the 30° incline on the table. With this light pressure, about four hours are required to cut through the meteorite. The pivot arrangement prevents chatter. A small force between the disc and the meteorite is desirable to avoid warped saw cuts resulting from bending the disc.

is ground smooth and flat by hand on a series of progressively finer strips of coated abrasive paper. Finally it is polished with diamond-paste on a fabric covered lap.

Etching in acid brings out the locked-in secrets which can be seen with the aid of the microscope. Iron meteorites vary in the amount of nickel they contain. Even minute crystals of diamonds have been found in them.

In the light of present accomplishments in making diamonds, scientists have some understanding of the tremendous pressures to which at least these meteorites probably have been subjected some time, somewhere in space.

The hard-to-cut sample was found to contain a material tentatively identified as cohenite or iron carbide.

Some minerals found in meteorites are not known on earth. Some of these minerals react with our moist air so that they would not be expected in the earth's crust. Of course some earthly minerals which are the result of weathering are not expected in meteorites.

Dr. Riggs is now working on X-ray equipment which will make possible further study of the distribution of elements in meteorites. A thorough metallurgical study of meteorites may help us understand the effects of high speed flight of objects through the atmosphere.

There was a time when men like Dr. Rinehart and Dr. Riggs were considered dreamers because they sought knowledge of things that seemed to have no practical value. People once laughed at men who talked of smashing atoms and firing rockets. Today, as we see bits of information gathered painstakingly by dedicated scientists forming an overall picture of scientific achievement which the layman can comprehend, we see that these men are the true pioneers of our age.

THE MANGANESE MINES OF CRIMORA, VIRGINIA

By EDWARD J. MARCIN

1917 Meadowbrook Rd., Merrick, L.I., N.Y.

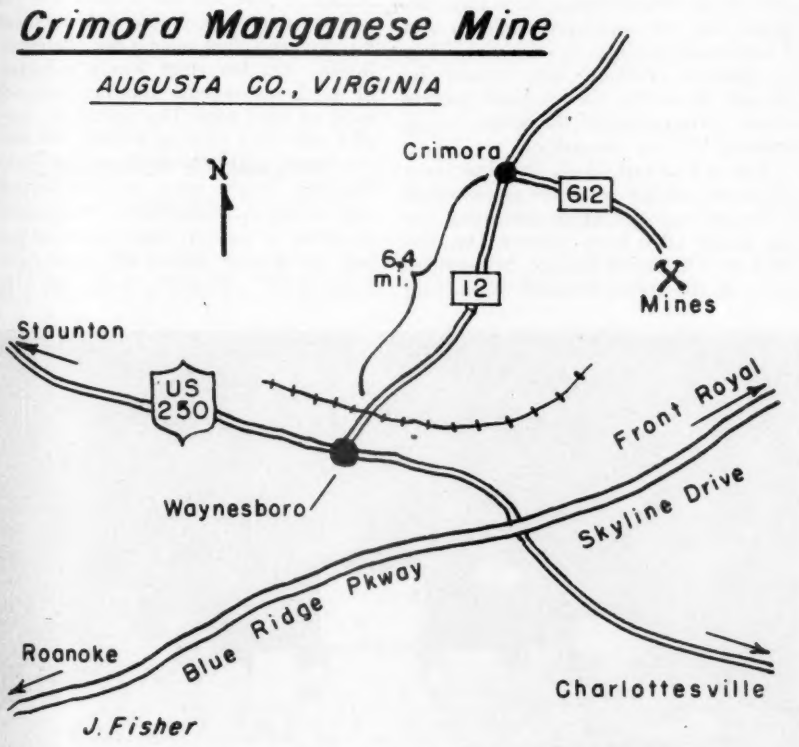
The Manganese mines of Crimora, Virginia are the oldest and largest of the manganese workings in the United States. They were opened for production in 1867 and have been operated intermittently until 1955. At present they are abandoned because the amount of high grade manganese ore has become limited, however there is still an abundance of low grade material (high silica content).

The ores of the mine are Psilomelane, Pyrolusite and Wad (impure, earthy pyrolusite). The difference between the high and low grade psilomelane is not important to the mineral collector for the forms in which it occurs is the same for both grades, the obvious difference between the two grades is that the high is blacker and somewhat softer. The psilomelane occurs in a varied assortment of rounded forms that range from balls or globes to mammillary, botryoidal and stalactitic shapes. The pyrolusite is commonly intermixed with the psilomelane as wad. The brilliant, metallic lustered, accicular crystalline material is more commonly found in a quartzite conglomerate. The quartzite conglomerate is frequently fissured and it is in these

cavities that the finest crystallizations occur. The forms that the pyrolusite assumes vary from the most usual accicular aggregates to perfect pseudomorphic crystals after manganite. Least often it occurs as beautiful velvety surfaced botryoidal masses. These are the most difficult specimens to secure because of the extreme fragility of the surface which readily flattens on slight contact.

Geologically, the mines are situated in a huge synclinal fold of Potsdam quartzite. The basin formed by this fold is filled with clay and it is in this clay that the nodules of manganese ore occur. The Potsdam quartzite is of Cambrian age and since pyrolusite and psilomelane are of secondary origin it is probable that this deposit is the result of reconcentration of the manganese from primary ores occurring in the original rock of this area.

The mines are easily accessible by good roads and the collecting area does not require hiking or climbing since it is fairly flat and there are no dumps. The ore is scattered in abundance throughout the entire area as float, consequently collectors can "high-grade" without qualms that they are taking selected ore specimens.



WOMEN'S CORNER OF R&M

Conducted by Winnie Bourne
c/o Rocks and Minerals
Box 29, Peekskill, N. Y.

Dear Winnie:

Enclosed is my check for two more years subscription to your delightful little magazine which has been a part of our family reading matter for about two decades. Several years ago you kindly sent me some very helpful information about interesting mineral sites in New England, which my two teen-aged children and I used that summer on our motor trip to Quebec. Perhaps you would be pleased to receive the enclosed picture which portrays one of the achievements fostered by your magazine.

This is a picture of my daughter, Lois Minning, and her very own collection of rocks and minerals which won a top rating in the Ohio State Science Day Exhibit at Wittenberg College, Springfield, Ohio, in the spring of 1956, when Lois was a senior in high school. She is now a sophomore with scholastic honors in Oberlin College.

The picture was taken in our dining room during the week following the award, when Lois demonstrated her collection to the pupils in the local high school. If you will use a hand lens you will see that a copy of R & M occupied a prominent place among her "Reference Books". On her right was a collection of small instruments and her knapsack used on field trips. Her specimens were of a wide and pleasing variety and were displayed, with descriptions and identifications, in pill boxes and microscopic slide boxes, these containers being readily available in quantity since both her parents are doctors. Nearly all of the specimens were collected and identified by

Lois Minning and part of her mineral collection.

Lois herself on our annual family trips that have included nearly all of the 48 United States and several provinces in Canada and Mexico.

Lois went on her first rock hunting trip when she was six weeks old, riding from Ohio to Wisconsin in an auto crib, but her collecting days did not begin until several years later. In the home where she has lived all of her life there are beautifully colored boulders built into the fireplace which were collected by her parents from the bottom of Lake Huron near the southern shore of Manitoulin Island before Lois was born, and Lois has never known a time when there were no piles of rocks in our basement awaiting study and identification.

I firmly believe that if more parents took time each year to go traveling and rock hunting with their children, and fostered learning as much as possible about all that is new on such trips, there would be far less juvenile delinquency and many more happy times together to remember always.

Pearl Zeek-Minning, M. D.
Fourth & Gay Sts.
Williamsburg, Ohio

Collector's Corner

For the special benefit of collectors who may be living in areas far removed from other collectors we have opened this feature. In this corner, a collector may have his name and address listed for the purpose that other collectors may write him in the hope that through correspondence, exchange of ideas and specimens, new friendships may be formed. Listings are free.

Gary L. Powers, 1126 E. 3rd Ave., Mesa, Ariz.

Mrs. John Branch, 3820 Ridge Ave., Tampa 3, Fla.

George & Velma Wyatt, 2002-57th, Tampa 5, Fla.

Maurice Lamb, Niota, Ill.

Malcolm Arnett, RFD 1, Box 253, Corydon, Ky.

Nelson Garner, RR 2, Sharpsburg, Ky.

Timothy K. Beck, 9 Arthur Rd., Andover, Mass.

Leslie R. Clift (11yrs), N. Main St., Raynham Center, Mass.

Larry Smith (12 yrs.), 2051 Clyde Park, S.W.. Grand Rapids, Mich.

Frank Ludeman, Pilgrim Terrace Trailer Court, RR—US 1, Houghton, Mich.

Mrs. Dorotea M. Rowe, RD 1, Nassau, N.Y.

Mrs. Walter Dundorf, Jr., 445 Valley St., Marysville, Pa.

Edward Helpenstell, 1429 Sandpiper Dr., Houston 36, Texas

T. Nichols, Rt. 4, Bowie, Texas

V. Sabin, 723 Steves, San Antonio 10, Texas

Ben Marshall, P.O. Box 926, Amelia, Va.

Deo Hugo, Ookiep Hotel, Ookiep, Namaqualand, C.P., South Africa

ROCKS AND MINERALS ASSOCIATION

(World-Wide)

NOTES & NEWS

Don Presher, Pres. Box 29, Peekskill ,N. Y.

FELLOW ROCK HOUNDS—WOULD-BE OR ADVANCED, AMATEUR OR PROFESSIONAL—STAND AND BE RECOGNIZED!—Let us make use of the many benefits that can be ours if we so wish it to be, by doing something about making our association an active, respected, and recognized organization.

The Rock and Mineral Association is a sort of parent organization that serves clubs and individuals alike and is of mutual benefit to its many members scattered all over the world.

Many of our fraternity have almost forgotten that they belong to the oldest and largest association of its kind in the mineral collecting field. Many of you have not bothered to exercise the privilege of applying for membership, that your subscription to the Rocks and Minerals magazine entitles you. So much pleasure for ourselves and others can result from our unity, the satisfaction and pleasure that we experience from our common interest in rocks and minerals can be increased multifold.

It can give us so much more opportunities to help fellow rock hounds and to be helped in turn, there are none of us that cannot be of valuable assistance to others, however limited our knowledge. This is especially true in regard to directions to local collecting areas and to information as to the kind of minerals to be found in their locality, also where it is permissible to collect and most important, be of help in securing the privilege of collecting in places that would otherwise be closed to you.

A great many of us need help to really get started, trying to identify minerals from books and pictures can be very confusing, on the other hand help from more experienced collectors can make it so much easier. Books are of valuable assistance when you have reached a certain milepost but until then there is no better way to learn than the friendly assistance of a more advanced collector. I can speak from experience on this as my first spark of interest came from reading about mineral collecting but I found that books were not of much help when I tried to start a mineral collection, had it not been that I had the good fortune to be acquainted with our esteemed editor, my interest might have died then and there and I never would have known of the pleasure and fun that this hobby has given me.

We can build up a respect for our ranks that will open doors for us that might otherwise never be opened, by demonstrating that we are a reliable and responsible group of citizens. I have yet to meet a rock hound that I have not been proud to call a friend. I think we have been neglectful in not taking a larger measure of enjoyment from our common interest by not being active and recognized members of our great association.

I would like very much to hear from fellow members and have your opinion on ways and means to help ourselves. How about your thoughts on such things as emblems for our cars, patches for our shirts, coats or hats, stickers for windows or any others means of identifying ourselves to each other and to the public? It seems to me that this is one of the most important steps to take.

To those of you who are subscribers and have not applied for membership, why not do it now and take a part in this worldwide organization and help strengthen the bonds of fellowship between you and me and the many thousands like us. By sharing our pleasures with others—our own is increased. Let's blow our horns, loud and clear so that we may find each other.

Once again, your ideas, opinions and

criticisms will be welcome and appreciated. The address is Don Presher, Pres., Rocks and Minerals Association, Box 29, Peekskill, N. Y.

Please send a self-addressed stamped envelope when applying for membership card.

CALIFORNIA FEDERATION CONVENTION SHOW

Twenty thousand attendance at the June 20-22 Gem and Mineral Fiesta at San Bernardino indicates the hold that our hobby has. The Orange Belt Mineralogical Society was host, and I can testify that the members gave every courtesy that one could think of.

The show was well planned. One of the hosts informed me that 50 dealers had stands, plus three wholesalers who had supplies outside the large Orange Show Grounds building. There were 51 special exhibits (invited), including a suite of diamonds from the Smithsonian and a collection of gem stones and jewelry by R. M. Williamson, of Cape Town, Africa.

Howard Fletcher of Redlands showed "Matched Blocks of Wood"—two-inch cubes of natural wood and accompanying cubes of the same wood petrified. He also had a slab of Idaho stone that looked like a sawed board. A library is said to have used these slabs for shelving.

A five-pound, 11-inch crystal of beautiful kunzite was exhibited by Charles Reynolds, of Escondido.

The Atomium Tower of rock spheres and aluminum tubing, modeled after the one

Photo by A. W. Browne

Gem and Mineral Fiesta at San Bernardino, Calif., June 20-22, 1958. Attendance, 20,000; cases, 300; special exhibits, 51; dealers, 50.

at the Brussels World Fair, was made by J. R. Mathie.

Mrs. Erna Clark's Dinner of Rocks, which has been pictured in a national magazine here and in France, evoked interest and delight in many. Lima beans, loaves of bread, a ham, a roast, and cuts of cake and pie were delightful simulations. "Raisins" spilling out of a Sunmaid box fooled me, they were so realistic.

The William E. Phillips, of Beverly Hills, collection of stone and gem carvings was noteworthy.

Jupiter's Jewelry, a club project of the Verdugo Hills Gem and Mineral Society, making all items six times the usual size, was a surprising display. Such an increase in size makes the jewelry colossal.

Spheres were in prominence. Two revolving, lighted pyramids of spheres were at the front. Cases held many others. Paul Itnyre of San Bernardino, the man of a thousand spheres, demonstrated how they are made. He gave us the sanding and polishing procedure in a few minutes, using tin oxide and oxalic acid on that calcite sphere. Paul's offer to remove the polish and do it over again if anyone wanted another demonstration nonplussed me.

Size and quantity and quality were evident in the slabs of petrified wood by the Campbells of San Luis Obispo. The same adjectives apply to the rose-red rhodonite of Jess Waits and Charles Cross.

Gold in many forms collected by Collis S. Mayflower, of Blythe, filled a case to overflowing.

A perambulating stone-cutting machine modeled after ancient Idar-Oberstein equipment by Dr. William Zemple, of San Bernardino, was operated by Eugene Shepard of Colton. It was a good exhibit.

Chief Chester Yellowhair made Indian jewelry at his stand. I shall long remember the look on a very young paleface, who had climbed up on the counter, as he gazed fascinated at a real Red Indian fitting a silver and turquoise bracelet to a white squaw's watch.

Mrs. John Lubking, of Delano, had an exhibit unique in the true sense of the word. Using ordinary and oversize egg shells, she decorated them and enthroned in them gems and delightful miniatures. Her hobby stems from an Old World custom.

Three hundred cases of exhibits cannot be dealt with in justice in this brief report. For example, there was the case of polished agatized fossil coral geodes from Florida, by Hub Dafoe, of Oakland.

A fine show! And I remember their good show of 1939 also.

Arthur W. Browne
623 Palo Alto Ave.
Mountain View, Calif.

A rockhound at Ten!

Editor R&M:

I have the luck of living by a lake. It is China Lake. Last summer I walked to one of the points every 2 or 3 weeks. As I was coming back once, I watched for pretty rocks. The one I found wasn't pretty but very unusual. It was a fossil with shells, footprints, and other odd things in it. I've never seen one like it before.

The other specimens I found near here are common granite, quartz, and a little tourmaline.

I am 10 and have been collecting for 4 years.

Susann E. Jacob
Northern Winds
South China, Maine

New Jersey State Geologist retires.

Trenton, N. J., July 1, 1958—Meredith H. Johnson, after 30 years in public office, retired today as State Geologist of New Jersey. Dr. Kemble Widmer succeeds Mr. Johnson in the position of State Geologist and Chief of the Bureau of Geology and Topography.

New Jersey's official geological work is the oldest continous operation in America. Established in 1864, the State Geological Survey Office has had only four directors since its founding. Dr. Widmer is the fifth individual named to the post.

The State Geologist's office is the recognized source of factual information pertaining to the geology, mineral resources, underground waters and topography of the state. Geologic duties include mapping the surface and subsurface geology and determining the distribution of their chemical and physical properties, how they can best be recovered, how they can be used, and their probable commercial value.

Within the last five years the State Geologist's office has made national news with the discovery and identification of commercially important deposits of ilmenite and of certain rare earth minerals.

COLLECTOR'S KINKS

Collectors are cordially invited to submit notes from their experiences and so make this department of interest to all.

Cleaning Minerals

I noticed in your March-April 1958 issue, several queries regarding the cleansing of minerals. Perhaps you might care to print the following few hints which we have found workable in our business.

1. *Removing wood-tar* (i.e. smoke blackened specimens). Generally caustic soda is effective against such disfigurement. BEWARE. Caustic soda is dangerous to handle. Do not touch either the dry flakes or the solution with the hands.

Soak the specimens in a strong solution of caustic soda. The length of time required may vary from 1 minute to ½ hour depending on the amount of blackening and strength of solution. Pour off the solution and soak in a detergent before finally scrubbing with a stiff brush (nylon or similar nailbrushes are admirable).

Whenever handling caustic soda keep a bottle of vinegar handy. Thia is a common antidote for caustic soda and should be poured liberally on any stray splashes on the hands or clothes before washing the affected part thoroughly.

This method is excellent for most silicate minerals and those of the quartz group but may affect sulphides etc.

For specimens requiring less drastic treatment, kerosene should be used. This is the most common solvent of petroleum tars and is generally effective on wood-tar. Soak the specimen in kerosene for as long as necessary and then brush it thoroughly with kerosene to remove the softened tar (use a paint brush for delicate specimens and a nail-brush for more robust pieces). The kerosene can be removed by soaking and washing specimens in a detergent solution.

2. *Removing clay minerals.* I know of no method for removing clay from a porous material such as turquoise but the following tip may be helpful. Many pegmatite minerals such as topaz, tourmaline, cassiterite, columbite etc., often have a hard, porcelain-like crust of kaolin minerals. This crust is often impossible to chip off. In such cases we have found the proprietary soft-drink Coca-Cola most effective. Soak the specimen for up to 24 hours in Coca-Cola (other aerated waters may also be effective, but we have not tested them). The disfiguring crust can then be flaked off readily with a knife and the last of the adhering fragments brushed out with a wire brush.

3. *Cleaning sulphide minerals.* Firstly try the above method for removing kaolin crusts. This may often be effective. If not we need more drastic treatment. Weathering of sulphide minerals consists of ultra thin films of alteration products of the primary mineral and these can be removed by acid leaching. Concentrated hydrochloric acid (Spirits of Salts) should be tried. (Warning: Keep your hands out of the acid—wear new rubber gloves for handling the specimens after making sure they have no pin holes. Always keep baking soda handy to neutralize any spilt acid. Spread baking soda liberally on any splashes and wash immediately).

Generally tarnished sulphides only require up to 30 seconds in strong acid to cleanse them. Dull specimens often need only be dipped in the solution and removed immediately. After the specimen has been acid cleansed it should be soaked in running water for several hours. We endeavour to leave such specimens in a sink overnight with a trickle of water running in continuously. The above method has been proved particularly effective with bornite, chalcopyrite and pyrite. Try it sometime—you will be amazed at the results. It is also effective for cleansing galena but do not leave the specimen in too long or it may tend to etch the crystals slightly.

NOTE. The above method must not be used on specimens containing calcite, dolomite, siderite, etc. Such minerals will be rapidly etched and corroded by the strong acid. Alternatively calcite etc. can be dissolved entirely from sulphide crystal groups if so desired by soaking in a weaker solution (say 2 parts hydrochloric acid to 10 parts water) until all effervescence has ceased.

We hope that the above information will prove of assistance to your readers.

D. R. Walter, Manager
Specimen Minerals (Australia) Limited,
Co-Editor,
The Australian Amateur Mineralogist.
57 Todville St., Woodville West, S.A., Australia

Club and Society Notes

Attention Secretaries—Please submit neat copies. Give dates and places of meetings. Check names for correct spelling.

East

Queens Mineral Society

The Queens Mineral Society held their 21st Annual Dinner on Tuesday evening May 27, 1958 at the YMCA in Jamaica. Thirty-six members and guests attended.

Before dinner, president Al Green read a notice from the Federation regarding the activities during the convention. Everyone enjoyed a most excellent meal. Many thanks to Lou Roth our program arranger.

After dinner the evening was turned over to Vic Prebil who showed some beautiful colored films and gave an interesting talk on Mt. Mazama, Crater Lake and Mt. Lassen.

There were fourteen members brave enough to venture out on a field trip to New Jersey that rainy Sunday, May 18, 1958 but when we arrived at the Limecrest Quarry the sun came out and everyone had a good time collecting. We left Limecrest and went on to Franklin where everyone kept Lou Roth busy testing their findings with his equipment. Lou had three different type lamps with him.

Victoria Touhey, Secretary
87-16A 214 Street
Queens Village 27, New York
HOllis 4-4494

Brooklyn Mineralogical Society

The ninth business meeting of the Brooklyn Mineralogical Society was held on May 9, 1958 at 8002–19th Avenue Brooklyn 14, N. Y. For a change, we had good weather and, as a result, a fine turnout. Our president, Doc Weiss, welcomed our new members and other guests, after which our meeting proper was opened.

A discussion was held in re. our successful mineral exhibit at the Kings Highway Public Library. A letter of thanks was sent to the *New York Mirror* for its story covering this exhibit. Dr. Weiss read a letter from the Brevoort Savings Bank of Brooklyn in reference to a future exhibit. They have a very large front window but with the help of all our members we expect to fill it. Since our secretary, Mrs. Hershoff, was on a trip to Las Vegas, a combination visit and collection trip, Barbara Weissbard acted as secretary for this meeting and did a very good job of it. Mr. Haber was appointed official historian of the Society and authorized to purchase a large scrapbook for notes, clippings, etc.

In line with our thumbnail mineralogical sketches Mr. Walter Cooper gave a 15 minute talk on cinnabar. He discussed its chemical composition, its form and color, its place in the crystal system, its sources, and uses. He also showed 5 beautiful specimens that he had collected. Doc Weiss discussed the use of mercury in medicine. A series of questions about the metallurgy of mercury was then asked and answered.

Our monthly raffle was held. One of our new member, Mr. Cohen, had beginner's luck and won the whole catch, which consisted of malachite, fossils in shale, Jurassic red sandstone, selenite crystals, a test core, and a book on minerals.

Rockland County Mineral and Gem Society New York

At our regular monthly meeting in June, our main speaker, a graduate of our Junior membership, was Ross Horowitz of Pearl River, N. Y. Ross is sixteen and a senior member of outstanding ability, he is going to make Mineralogy and Geology his life work. He spoke on his trip to Maine over the Memorial week-end.

He and his cousin David Zaslavsky, Mrs. Estelle Horowitz the mother of Ross driving,

left Pearl River on Thursday at 10 p.m. and drove all night, reaching West Paris, Maine, at 9 a.m. the next morning. After breakfast, they found accommodations for Mrs. Horowitz, the boys intending to camp out. They visited Mr. S. Perham at his store, who told them that he had put in a blast at the Harvard mine two weeks before; this trigged the boys into an all day activity there, and they were rewarded by finding some nice green tourmaline. By Mr. Perham's estimate they also found the best specimen of orange cookeite that he had ever seen.

Friday night they camped out at the Nubble Mine, and Saturday morning they found their first specimen of beryllonite which was accidentally found when hunting for chrysoberyl. Saturday late afternoon they went to Newry, Maine, and found small specimens of cassiterite with triphylite, exceptionally large brown tourmaline crystals, dahllite, and very good specimens of spodumene. These were all found under great difficulty as they had to fight swarms of mosquitoes and black flies. When they got back to the cabin of Mrs. Horowitz, she hardly recognized the swollen face of her son, Ross, but was very proud of the two boys for the fine specimens they had collected. We, as a club, are very proud of Ross and his mother, and we are sure that Ross Horowitz will not only be known to us for many years but will be well-known in his chosen field, and we hope that a mineral will someday be named after him.

Rochester Mineralogy Club

The Rochester Mineralogy Club meets the first Thursday of each month at the Museum of Arts and Sciences on East Avenue, Rochester, N. Y. Meeting time is from 8:00 p.m. on. Visitors are welcomed.

Miss Marjorie Rackham, Sec.
29 Electric Ave.,
Rochester 13, N. Y.

Lapidary & Gem Society of New York

The members of the Lapidary & Gem Society of New York entered into a new and interesting program for 1958, with the election of officers, which took place at the Hotel Paris at the first business meeting of the Club in January.

The Society meets at Hotel Paris, 97th Street & West End Avenue, New York 25, N. Y.

Officers of the Lapidary & Gem Society of New York.
Left to right—Nicholas Ray, 2nd Vice Pres.; Seymour Schweitzer, Secretary; Martin Walter, President; Fred Salchi, Treasurer; Joseph Stromwasser, Vice Pres.

Connecticut Valley Mineral Club

The March 5th meeting was held in the Pratt Museum of Amherst College, Amherst, Mass. with Dr. George W. Bain, head of the Dept. of Geology at Amherst discussing "Minerals Made by Ordinary Ground Water". He described the formation of sulphates, chlorides, bromides, carbonates, vanadates and others. At this meeting the new officers elected included: President, B. M. Shaub; 1st Vice President, W. I. Johansson; 2nd Vice President, Albert Sebela; Secretary, Mrs. B. M. Shaub; Treasurer, Raymond Robert.

The April 9th meeting was held in the Dept. of Geology, University of Massachusetts, Amherst, Mass. with Dr. H. T. U. Smith, head of the Dept. of Geology, speaking on the "Geologist at Work". He indicated by means of Kodachrome slides how the geomorphologist can study many landscape features from the air.

The May 7th meeting was held in the Springfield Museum of Natural History, Springfield, Mass. with Dr. Gerald P. Brophy of the Amherst Geology Dept. as speaker. He described the occurrence and properties of the new mineral, Umohoite, his recent studies of some of the copper arsenides and the new uranium locality near Pittsfield in western Massachusetts.

Mrs. B. M. Shaub, Sec.,
159 Elm St.,
Northampton, Mass.

Keene Mineral Club

On June 7th we met at the Whitehead's home for our annual meeting, with a covered dish supper.

We were also celebrating our 10th anniversary with 12 of the original group, still members and among the 42 present at the meeting. Mr. and Mrs. Emlen Pitfield, now living in Hudson, were invited to join us at this meeting. It was through Mrs. Pitfield's efforts, we organized the club in June 1948.

After a bounteous meal we held our meeting with the President, Mr. Edwin Ellis presiding. The Secretary and Treasurer gave reports, also several letters were read and an invitation to the Dort's cottage for our July meeting, this meeting changed to the second Saturday. We meet the first Saturday of each month.

The Secretary passed out ballots for the election of new officers. Those elected were: President, Mr. Sherman Reed, Vice President, Mr. Julian Wetherbee, Secretary, Mrs. Perley Pratt, West Swanzey, N. H. and Treasurer, Mr. Franklin Mack.

We ended our year with 55 members.

The program for the evening was an article "The Nature of Symmetry" from the Jan. Natural History Magazine, read by Mr. Carle. A paper on the "High-lights of our club's activities, since 1948," this was compiled and read by the Secretary. Next an original poem on the club, written by the Secretary and read by Mr. Elmer Roentsch. This was followed by a mineral quiz and a contest on identifying minerals.

Mrs. Julian Wetherbee
22 Wheelock St.,
Keene, N. H.
ex. Sec.

Berks Mineralogy Society

On October 8th, 1957, at 8:00 P.M., Reading, Penna. was blessed with the birth of the Berks Mineralogy Society in the class room of the Reading Public Museum and Art Gallery. This event was the result of months of meetings of a small group of very interested people, who spent a great amount of their time planning this birth.

The Berks Mineralogy Society meets 10 months of the year on the 2nd Tuesday of the month in the class room of the Reading Public Museum and Art Gallery. There will be no meetings during the months of July and August. We would be very happy to have visitors from other organizations at our meetings or any other interested persons. Our meetings are open to the public.

Sunday May 11th the first field trip was held at the Bethlehem Steel Quarry at Bridgeport, Penna. Quartz, calcite, pyrites, sphalerite, dolomite, serpentine and soapstone were found. Mr. Royal of the Bethlehem Steel Co., proved a very gracious and conscientious host. May 13th we held the First Annual Exhibition, each member was able to exhibit up to five specimens along with a label giving the name of the specimen, where found and date. This was a most interesting meeting as some of the exhibits were an inspiration and a challenge to improve our own collections. Each exhibitor was awarded a prize of another specimen, the prizes were donated by members. The reason that every one won was that the judges took the easy way out rather than try to judge so many good exhibits.

Five minutes of each meeting is being devoted to Safety, also we are trying very hard to promote the use of safety glasses or goggles. The safety committee agrees with the idea that accidents do not just happen, they are caused, and the human is usually at fault.

Howard R. Hays, Sec.
325 S. 17th St.
Reading, Penna.

The Mineralogical Society of Pennsylvania

The annual meeting of the Mineralogical Society of Pennsylvania, was held on June 8, 1958, at the old Leiper Quarry, now known as the Facenda Quarry, near Swarthmore, Pennsylvania.

Although some tourmaline, beryl, doubly terminated apatite, garnet, autunite and torbernite were found, the yield was not high for the 180 members and guests. The feldspar and associated minerals are decreasing.

The Society voted to incorporate and to join the Eastern Federation. The advantages of both these moves are obvious.

The members travelling the longest distance, Charles and Roberta Wight of Stratford, Connecticut, arrived in their field home on wheels decorated with a one-square-foot MSP emblem on its bus-like front.

Bernard H. Kress
4018 Kottler Drive
Lafayette Hill, Penna.

Franklin Mineralogical Association

The secretary-treasurer wishes to report the following:

The Borough of Franklin, New Jersey has formally been notified by letter of the intention of the FMA and its members to cooperate with local officials there in conducting ourselves according to rules and provisions regulating collecting of minerals on borough property.

Facenda (old Leiper) quarry near Swarthmore, Penn., site of the Annual Meeting of the Mineralogical Society of Pennsylvania, June 8, 1958.

Sunny Cook is credited with coining the term "Franklinite" as it applies in general to FMA members and in particular dyed-in-the-wool FMA collectors.

Our thanks to Kenneth Fisher for his efforts of spreading information about the FMA which resulted in a notice of our objectives in the May issue of the Keystone Newsletter, publication of the Mineralogical Society of Pennsylvania.

Our appreciation to Louis H. Roth for his efforts in securing and making available to the FMA library, much valuable out-of-print information.

Our thanks too to Harold Kohn for his work on a mineral exchange program.

Several members have also been busy in their own areas in informing their mineral societies of the objectives and benefits of the FMA.

A preliminary Table of Contents for the 1st edition of the *Franklin Mineral Digest* has been submitted for consideration by members. Several members are already working on various parts for approval by the FMA.

Many members have availed themselves of the circulating library facilities of our organization. Aside from the Palache reprints, we have at present about 15 articles, many of them original and never before in print. Some of the sources drawn upon for material include the following: Annual Report of the State Geologist, New Jersey; Am. Inst. Min. Eng. Trans.; U.S. Geo. Survey (Atlas); Mining-Engineering; Inter. National Geo. Guidebooks; American Mineralogist; 13, 14 and 15 New Jersey Equity and others. A list of all current and planned articles are available to members upon request.

Kenneth Fisher and Louis Roth are cited for submitting articles to the FMA library. Sunny Cook is likewise credited for securing one voluminous article long out-of-print.

Collectors desiring membership should send check or money order in the amount of two dollars to:

Gerald Navratil, Sec.-Treasurer
Box #70, RFD #2
Middleburgh, New York

Membership cards are sent out by return mail.

Mid-West

Des Moines Lapidary Society

Our society is now planning on something quite different which we hope you may think is news-worthy. It is called "Rockhound Roundup". More than a display—less than a convention.

The place: Veterans New Auditorium, Des Moines, Iowa.

The time: October 18th and 19th—1958.

The "Rockhound Roundup" will feature the following:

1. Hundreds of feet of displays of all classes of jewelry, lapidary objects, Iowa rocks and minerals, table decorations, wall decorations and plaques, etc.
2. Sales Booths: With imported and domestic rocks, slabs, lapidary objects, and jewelry.
3. Special display on the V Lock—A new art for the lapidary hobbiest.
4. Daily lectures or programs.
5. Swaps: Special room for trading and visiting.
6. Refreshment booth.
7. An important feature will be a lapidary contest open to all without charge—popularity vote—awards.
8. Many door prizes.
9. A booth of rockhound books and magazines.

It is felt this effort of ours will help spread appreciation of the beauties of the rocks of nature and will lead to new converts to our hobby.

George C. Wingert
3720 East 14th St.
Des Moines, Iowa

Tulsa Rock and Mineral Society

Organized April 30, 1958, this new Society now has 72 members which meet on the 2nd Monday of each month at the YWCA, 5th & Cheyenne, Tulsa, Okla.

Harlan West, Sec.
903 S. Yale
Tulsa, Okla.

Texas

Brazos Gem and Mineral Society

A new club, the Brazos Gem and Mineral Society, was recently formed in Mun-

day, Texas. Meetings are held on the first Saturday evening of each month at the American Legion Hall.

Mary Weaver Hunt, Sec.
Gen. Del.
Munday, Texas

Arizona

Mineralogical Society of Arizona

The Paleolithic Man learned to chip sharp edges on the stones he used in obtaining food, to affix handles to the bludgeoning tools, thereby making his daily effort to keep alive a little easier, and increasing his leisure hours. The Neolithic Man extended the development by smoothing and shaping the materials about him, adapting them to his use, domesticating plants and animals, building houses, ships; he planted, harvested, stored, traded, and fought with these more convenient implements. With every technological accomplishment his time for ease and comfort was expanded.

So in fifty thousand years we have attained the forty hour week, and have so much leisure time we don't know what to do with it.

Thus did Odd S. Halseth, Archaeologist for the city of Phoenix, trace the importance of minerals to human culture in his talk at the May 16th meeting of MSOA.

"People are always looking for more resources to turn into power, energy", said Mr. Halseth. "Something which helps mankind is intrinsically good. Misuse is not the fault of the mineral." In summing up he pointed out that from an anthropological point of view the minerals of importance to us are the eleven basic minerals required in the soil to produce food, and that we can continue to exist without the "push-button" elements that make our life comfortable. They will create wealth but not health.

Katherine M. Trapnell,
Corresponding Secretary
1905 E. Roma
Phoenix, Arizona

Brazil

Associacao Brasileira de Gemologia

Our National Gemological Association is now going into its 4th year of existence (June 30, 1958). Membership is increasing steadily and we are now nearing 500 members, mostly Brazilians. We already have had a number of field trips to gem localities near our city.

Our official magazine, "Gemologia," issued quarterly, is backed by the jewelers and gem dealers of our city.

With the increase of interest in gemology in Brazil, ROCKS AND MINERALS will soon be receiving some new subscribers. Some of my friends and I, have already praised ROCKS AND MINERALS to the members calling their attention to the magazine's high position in world-wide gemology.

Joaquim Unterman,
Alameda Fernao Cardim, 332
San Paulo, Brazil

Bibliography on Maine Geology 1836-1957.

This 6" x 9" booklet contains 143 pages of cross-indexed references to more than 1600 publications, papers, and articles by 700 authors dealing with geologic subjects in Maine.

Price per copy: $1.07 plus $0.03 sales tax–Total: $1.10.

Payment in advance is required. Make check or money order payable to *Treasurer of the State of Maine*. Copies should be ordered from: John R. Rand, State Geologist, Dept. of Economic Development, Augusta, Maine.

Mineral Collecting in Black Hills

(Continued on page 397)

in the Black Hills it is possible, for a small fee, to pan for gold. Though some areas are worked out and some mines do not welcome visitors, there are still enough mineral collecting areas in and around the Black Hills to make a trip to this area well worth while for the serious mineralogist.

PUBLICATIONS RECENTLY RECEIVED

Mason—Principles of Geochemistry (2nd Edition).

By Brian Mason, Curator of Physical Geology and Mineralogy, The American Museum of Natural History; Professor of Mineralogy, Columbia University. 310 pp., 48 figs. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $8.50

Principles of Geochemistry summarizes the significant facts and ideas concerning the chemistry of the earth and provides a coherent account of the physical and chemical evolution of our planet.

The book begins by describing the development, scope, and subject matter of geochemistry. The following chapters deal with the earth as a planet, its relationship to the solar system and to the universe, its internal composition, the abundance and distribution of the elements, and theories about the earth's pregeological history. It then describes the materials and processes at and near the surface of the earth, the geochemistry of igneous, sedimentary, and metamorphic rocks, and the hydrosphere, atmosphere, and biosphere. The final chapter is a brief summary in terms of the geochemical cycle.

Due to the many advances and discoveries that have been made in the field, much has been added to this new edition, and many chapters have been revised. Some of this new material includes discussions on electro-negativity as a geochemical factor, isotope fractionation in geological processes, minor and trace elements in metamorphic rocks, and energy changes in the geochemical cycle. Rewritten material covers the origin of the elements, isomorphism, atomic substitution, polymorphism, clay materials, composition and origin of petroleum, metamorphism and metamorphic rocks.

Data tables incorporate the most up-to-date information available, and the annotated bibliographies that accompny each chapter are valuable guides to the latest literature.

Pearl—Colorado Gem Trails and Mineral Guide.

By Richard M. Pearl, Associate Professor of Geology, Colorado College. 176 pp. Published by Sage Books (Alan Swallow, Publisher), 2679 S. York St., Denver 10, Colo. $2.95

This famous book takes you on an extensive gem and mineral collecting tour of Colorado, revealing the interesting places where Nature has stored her treasures.

Detailed directions are given for reaching the noted as well as the little known localities in all sections of this great mineral producing state. Included are numerous mileage logs never before published, and many sketch maps made especially for this book. A unique system arranges the localities along segments of the main highways.

Latest information is given on local travel and collecting conditions and land ownership, so much desired by collectors who want to make the best use of their time. Gem and mineral societies that welcome visitors—museums that display outstanding collections—are all described. Official maps and references to the literature are listed.

Simpson—Gem Trails of Texas.

By Bessie W. Simpson, who has traveled to every corner of the State of Texas in the past 10 years securing information on the best collecting areas. 88 pp., 40 well described maps (over 60 locations). Published by Gem Trails of Texas, Box 537, Granbury, Texas. $2.50

"The chief aim of this Field Guide is to give information to those who are interested in collecting gems, minerals, fossils and Indian Artifacts in the field as a hobby. For many years there has been a demand for a Field Guide for collecting in Texas, and as we have been rockhounds and collectors for 10 years and have traveled approximately 30 thousand miles a year collecting, going to Rock Shows and visiting collectors, I was practically drafted to compile this guide.

"The directions given here are presented as accurately and detailed as possible. I have personally collected in 99 percent of these locations. I do not pretend or guarantee that if a specific area is visited, that the collector will be amply supplied; however, if directions are followed I feel that a majority will find the described areas and not go home with empty rock sacks.

"There are milions of acres in the great Public Domain of the Western States where the rockhounds may collect at will, how-

ever, there is very little public land left in Texas. Be respectful to all property owners and they often in turn will give you permission to collect, and even at times guide you to the best collecting areas.

"Be sure to show your appreciation for his hospitality by properly thanking him, as you might want to return at a later date.

"Remember this Field Guide describes each location for collecting but does not give you permission to collect. Get permission from the owner."—quotes the author on page 5.

Cooper—Concise International Dictionary of Mechanics and Geology—English-French-German-Spanish.

By S. A. Cooper, Fellow of the Institute of Linguists. 400 pp. Published by Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y. $6.00

The purpose of this book is to provide geologists, engineers, and manufacturers with a handy volume in which they may find equivalents in the three main foreign languages—French, German, Spanish—of the expressions and names of components most frequently occurring in their sphere of work. The contents are mainly based on general machine parts and mechanical terms; to these have been added varieties of coal, iron and steel, alloys, minerals and geological expressions. The dictionary also contains the usual chemical reagents, scientific terms in connection with metals, car mechanism and cycle parts, mathematical terms, etc.

To the practical engineer travelling abroad or doing business with foreign countries this book will be of incalculable service.

Lapidary Journal's Rockhound Buyers Guide.

The April 1958 issue of *Lapidary Journal* was an unusually attractive and huge edition—Rockhound Buyers Guide Issue—232 pages. It was an annual encyclopedia for the rockhound—full of interesting items relating to his hobby and overflowing with dealers' ads to tempt even the most timid buyer. This issue is one of the best buys for the rockhound and we heartily recommend it to our readers. Copies were only $1 each and may still be available by contacting Lapidary Journal, Box 518, Del Mar, Calif.

Ver Planck—Salt in California.

A new state-wide study of a basic commodity, entitled "Salt in California," has just been released by the Division of Mines, San Francisco, Calif. A thorough investigation of the salt industry, from the occurrence of the mineral through the various methods of recovery and marketing, the new report, issued as BULLETIN 175, should find wide usage in all phases of industry, predicted Gordon B. Oakeshott, Chief of the Division.

Salt, itself, is basic; the need for salt in California from pre-history to the state's present, much-diversified industrial complex has been met in a variety of ways. The Indians, for example (treated in a separate chapter written by University of California anthropologist Robert F. Heizer), procured salt by eating seaweed or grass; during white occupation, salt has been mined from the many dry lakes in the desert, or captured from the sea.

Today, California produces more than a million tons of salt worth more than 6 million dollars each year, mostly from plants located along San Francisco Bay that take their product from the tidewaters of the Pacific. The story of the deveopment of this important industry, amply illustrated by photographs and maps, is well told in the 168-page bulletin. The author, William E. Ver Planck, is a member of the staff of the Division of Mines, and is the commodity expert on saline materials.

Bulletin 175, bound in handsome yellow cloth, is priced at $3.25, plus tax. Copies may be ordered from the Division of Mines in the Ferry Building, San Francisco 11, Calif., or may be purchased over-the-counter at the main office in the Ferry Building, or at the various branch offices: in Los Angeles in the State Building, 217 W. First Street (at Broadway); in Sacramento at State Office Building Number 1; in Redding at the Natural Resources Building, Cypress and Lanning Streets.

Dealers Price List.

Fluorescent House—A 28-page illustrated catalog listing fluorescent minerals and supplies, also books, etc., has recently been issued by Fluorescent House, Beach Place, Branford, Conn. A most beautiful cover showing fluorescent minerals in color is a special feature of the catalog.

Schiller—Rockhound's Book of Verse.

By Fran Schiller, one of America's gifted (poetically speaking) rockhounds. This little book is beautifully printed, beautifully illustrated and with a most attractive green and gold cover.

Fran Schiller has neatly compiled experiences, dreams and goals of the average rockhound in a poetic manner that is really captivating as we read on from poem to poem engrossed in memories of the past from our own experiences. "Rockhound's Book of Verse" is one book that will not be just thumbed through and put aside afterwards, but read from time to time as its contents (poems) have that quality like a good sermon or a certain phrase in the Bible to give us a needed daily lift. Order an illustrated copy today.

Published by the author, Fran Schiller, Luke, Md. $2.00

Everett Lapidary Shop.

A 16 page price list featuring gemstones, minerals, etc., has been issued by Everett Lapidary Shop, 2941 N. 65th St., Lincoln 5, Nebr.

BARITE LOCATIONS IN COLORADO

By DON INGLE

Blue Creek Road, Evergreen, Colo.

Perhaps the most famous location for blue barite crystals in the U. S. is the area around Stoneham, Colorado. (Sometimes referred to as coming from Sterling.) These lovely crystals are a welcome addition to any collection, but the State of Colorado has many other locations that yield equally beautiful barite crystals.

One of the favorite localities for collecting is around the town of Hartsel in South Park, Park County. Here, in a limestone matrix, are blue barite crystals forming in clusters and boxworks that make nice cabinet specimens.

Geodes with barite crystals and intergrowths of calcite are found in the canon-like trench formed by the Apishapa River, in Huerfano County, south-center Colorado.

Water-clear crystals of barite, some with a pale yellow tint, are found in geodes and vugs in the Book or Roan Cliffs near Grand Junction, Mesa County.

Manitou is a location for blue barite and celestite geodes, single and combined groups. Location of this spot is not too well known, and you will have to pump the natives for the place to look.

Barite is a common accessory mineral in the silver mines of Colorado. The San Juan Mountains, in particular the Ouray and Silverton districts, are the home of many mines that have produced great amounts of silver, and the barite associations with the ores of this area is widespread and most mine dumps will produce both crystal and massive specimens.

Here is a partial list of locations.

Argo Mine
Boulder Co.

White River Mine
Boulder Cañon,

Wagon Wheel Gap
Mineral Co.

Bashor Ranch
Larimer Co.

Della S. Mine
Aspen, Pitkin Co.

National Belle Mine
Ouray Co.

Lamartine Mine
Idaho Springs, Clear Cr. Co.

Near Castle Rock
Douglas Co.

Cement Creek
near Red Mt., Ouray Co.

Red Mt. Town
Near Silverton.

This list is only a partial listing of the known localities for barite in Colorado. Many of the mining districts in the state have workings that produce more of this material, and the visiting collector should be on the lookout for it. As a rule, it is a common mineral in silver, lead and zinc mines in the state.

WITH OUR ADVERTISERS

Conducted by James N. Bourne
c/o Rocks and Minerals. Box 29
Peekskill, N. Y.

Advertisers are cordially invited to submit News Items to this Department

T. E. Schulz of the Elk Electric Manufacturing Co., P. O. Box 216, Franklin Square, N. Y., informs us that their display ad featuring a "DO IT YOURSELF" Blacklight kit "has been very gratifying as to response from satisfied customers."

We are pleased to take note of above statement by Mr. Schulz and further add that perhaps many readers who may like to purchase a do-it-yourself blacklight kit for $19.75, but are a bit skeptical at the low price can be rest assured that the kit is neither a toy nor an inferior unit but one that provides filtered ultraviolet in sufficient intensity in both long and short wave lengths to observe the fluorescence of minerals when prospecting.

"All components of the "kit" are manufactured by reputable companies as General Electric, Corning Glass, and Amphenol Co., and are equal or better than competitive units on the market today" relates Mr. Schulz.

So order one of these Do-it-yourself blacklight kits today from Elk Electric Manufacturing Co., and find out for yourself that it is a pretty darn good buy.

From F. S. Sewell, San Francisco Gem Supply, P. O. Box 1770, San Francisco, Calif., we were sent a complimentary sample of Covelo Jade, 1" x 2" in size, polished, mottled green in color and of excellent quality. Dealers may write for wholesale prices and readers desiring slabs of this material can also request prices.

"We offer some good quality rough cutting material directly imported from India which include the following: bloodstone, carnelian, moonstone, moss agate, aventurine, sunstone, and tigereye. Satisfaction or refund against the above material," writes Mr. Sewell.

Note: We thank you for the nice specimen of Covelo jade, Mr. Sewell, and may our readers take note of some of the very nice material advertised by San Francisco Gem Supply with each issue of R & M.

George A. Bruce, Pres., International Import Co., 604 Peachtree St. N. E., Atlanta 8, Ga., will have an announcement to make in the future in regards to Jewelry enthusiasts.

"It's 'Outer Space Jewelry' which will be in sterling, gift-boxed and mounted with nickel-iron meteorites from Odessa, Texas," states Mr. Bruce.

Note: above mentioned jewelry is still in the preparatory stage and further information to same will be forthcoming soon, possibly in the Nov.-Dec. issue of R & M. Outer space jewelry should prove to be quite popular with everyone and we look forward to their introduction by George A. Bruce of International Import Co. of Georgia with interest.

Meanwhile we can take note of some very nice material being run in this issue of R & M. via the ads of International Import Company of Georgia.

We would like to pass on the following announcement as received from Roy Plummer of Plummer's Minerals, 4720 Point Loma Ave., San Diego 7, Calif., who advertize regularly in R & M.

"Plummer's Minerals in San Diego have been adding new lines of supplies to their stock to accommodate the in

creasing trade from the San Diego area. They now stock gemstone items both rough and cut and two new lines of jewelry mountings as well as a varied line of supplies for the collector, cutter and jewelry maker. Only one block from the cliffs overlooking the Pacific Ocean makes a visit to Plummer's interesting in more ways than one. Following the pattern of many hobby stores, hours are 9 a.m. until 9 p.m. on Thursday, Friday and Saturday. Other store hours are 9 a.m. until 6 p.m. daily except Sunday.

"Plummer's were long known as a mail-order supplier (over 12 years) but are now expanding their services to take care of increased mail-order trade as well as local walk-in trade."

Note: Mr. Plummer handles a good many of the orders received personally and you can be rest assured of satisfaction as to same.

———

Grant Thompson, proprietor of the Ottawa Valley Gem Shop, 1310 Bank St., Ottawa, Ontario, Canada desires to hear from readers of R & M. He is eager to serve you and can supply you with the following:

Canada and foreign cutting materials, lapidary equipment, blacklights, prospector's picks, silversmith supplies, grinding wheels, tumbled gems, polishing agents and powder, felt buffing wheels etc.

Note: Rockhound visitors are welcomed to Ottawa Valley Gem Shop to browse around and converse with Mr. Thompson, whose aim is to someday have the largest and most complete lapidary supply house in Canada. Let's give him a little encouragement toward that goal with an order or two by taking note of his ad via the classified section of R & M this issue. Best wishes to the future, Mr. Thomspon.

———

From Albert J. Bettey, Bettey's Minerals, 139 Hale St., Winchendon, Mass., we are the recipient of a very nice chiastolite cabochon featured in their ads regularly in R & M for $1.00 and up according to size and quality. We extend our thanks to Bettey's Minerals for this very attractive chiastolite cabochon and for readers to take note of Bettey's ads this issue re: to an attractive offer for (children and beginners) of rocks, minerals, crystals and fossils mounted and identified for their convenience. Mr. Bettey confides to us that "These beginner sets are also very helpful to scouts, in assisting them on their way in obtaining their badges on minerals."

Note: Here's an opportunity to be even more popular with your children by ordering for them a "Scout's Special" or alternate set of "14 Thumbnail Minerals" mounted and identified, both at reasonable prices.

———

J. G. Waters, 327 Chestnut St., Kingman, Ariz., who advertises in our classified section frequently relates to us the following:

"Had a very good response to my ad in R & M, was sold out sometime before the current issue was out. Included a note with each specimen sold, stating that the specimen could be returned for refund if unsatisfactory in any way. No specimens were returned, so guess the buyers were all satisfied."

Good for you, Mr. Waters.

———

From Ben O. Morton, of Morton Minerals & Mining, 21423 Highway 66, RFD 1, Barstow, Calif., comes this note of interest to our readers:

"Hello Folks:

"This flyer just left the launching pad loaded with the latest in material and prices. Have been working for a long time to accomplish this list giving you first class merchandise at a fair price. Never before have we had a list like this one. We are ready to fill your orders. All merchandise prepaid.

"Some of our material includes earring kits, boxed sets of assorted stones, cuff links, gaucho ties, and many, many others.

"Also in lb. lots: Rhodonite (pink & black) from Calif.; onyx, Death Valley, Calif.; Lavic jasper, Calif.; travertine, Calif.; and palm wood, Calif.

"Have good cutting material of palm wood, jasper, agate and jasp-agate, plus thousands of other specimens from $1.00 up to $500.00. Freight and postage paid on all merchandise."

Note: Our readers would do well by contacting Morton Minerals & Mining who regularly advertise in R & M for some real fine material at a fair price.

Advertising with us this issue is John M. Wise, Gemologist and Lapidary, 108 W. Fayette St., Baltimore 1, Md. Mr. Wise informs us he has representation in "West Germany, Kobe–Japan, Columbo–Ceylon, Melbourne–Australia and exports and imports all stones, cultured pearls, ivories, jades and other objects D'Arts. You may request our price lists and receive a free monthly informative bulletin. I am at your service in regards to gemstones, jewelry and mountings."

Note: Glad to have you with us, Mr. Wise, and may our readers take note of your ad in our display section this issue as to their needs.

Order your illustrated copy of the first book of poems written by a rockhound and dedicated to rockhounds from Fran Schiller, Luke, Md., who advertizes quite frequently in R & M. A descriptive quotation from Mr. Schiller reads as follows:

"Rockhound's Book of Verse" is a perfect gift for the Novice, Collector, Cutter or Dealer. Very humorous, entertaining and down to earth."

Note: I have read many of the poems included in this book and find them very well written and I'm sure many of our readers will likewise enjoy its contents. Price is but $2.00 postpaid and well worth the money.

Fossil Department

Conducted by Howard V. Hamilton
1340 Crandall Avenue
Salt Lake City 6, Utah

A PENNSYLVANIA FOSSIL PLANT LOCALITY

By DONALD BADMAN
229 Nicholson St., Wilkes-Barre, Penna.

If any of you rockhounds, who enjoy collecting fossils, are in the area of Wilkes-Barre, Pennsylvania, it would be well worth your while to visit an interesting collecting spot along the Ashley By-pass. As you drive south from Wilkes-Barre on U.S. route 309 (the main highway from Wilkes-Barre to Hazleton) you will notice to your left a large strip mining operation (anthracite coal) of the Pagnotti Coal Company. They have no objections to fossil collectors as long as they do not collect near operating machinery.

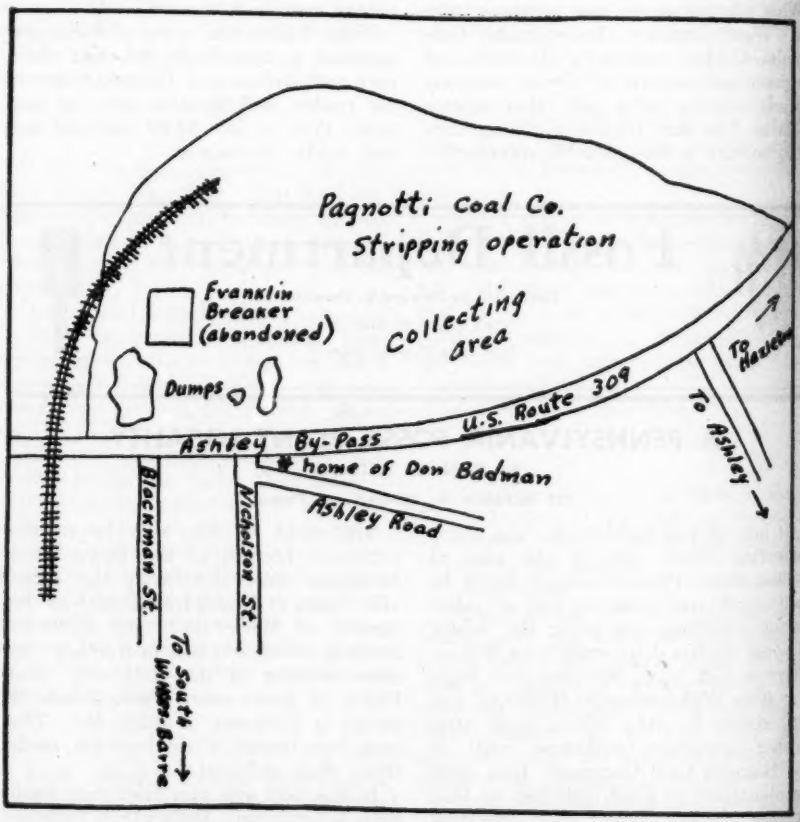
The rocks of this area lie in the geological horizon of the Lower Coal Measures, more specifically the Pottsville Series of Pennsylvania Age. In the vicinity of Wilkes-Barre the Pottsville Series is about 200 feet in thickness. In other sections of the Anthracite Coal Fields of northeastern Pennyslvania it attains a thickness of 1200 feet. The rocks here consist of conglomerate, sandstone, shale and coal.

In this area you may find such fossil ferns as Linopteris, Alethopteris, Neuropteris, Pecopteris and others. Bark impres-

sions of the club mosses such as Lepidodendron, Sigillaria and Stigmaria are available. Unfortunately there are no marine fossils. I have found what is believed to be remnants of two dragonflies. The insects are rare but the abundance of plant fossils more than compensates for the other deficiencies of the area. One note of advice, collect from the older shale banks; the rocks are easier to break and the specimens of finer quality.

If time permitted, a visit to the Wyoming Valley Historical Society, North Franklin Street (behind the Osterhout Library) Wilkes-Barre, would be helpful. They can give you much information and help on identification of the fossils. If any of you would stop to see me, I would be glad to help you. To those who will be unable to visit the area I would be glad to exchange specimens.

Thus if any of you wish to visit the age of ferns where the forests were green and still, where calmness was broken by the thunder of crashing fern trees, the splash of some amphibian or the hiss of a dragonfly, pay a visit to this coal stripping operation. The fossils are unlimited and the hours long and enjoyable.



A Pennsylvania fossil plant locality near Wilkes-Barre, Penn.

OPAL JEWELRY

For Those Who Desire Something Better

Beautiful fire Opal Earrings with the opal embedded in pure gold in 15. M.M. round, dangle type, either screw or for pierced ears, state which type desired.

Australian Opal
In All Its Glory

Handmade — no other dealer can obtain them or the high quality opal used in their makeup. They really command that second look wherever worn — Price, $5.00 per pair

Ladies' 3-unit pendants or bracelet — $7.50

And for the Gentleman

The same idea as above in Cufflinks $5.00

Tieclasp or Bolo tie — $3.00

Good quality Rough opal $10.00 per oz.

Satisfaction guaranteed or full refund

All goods sent Airmail Postpaid

Kurth's Jewelry

HENDRICKS, MINN.

Attention—R&M Members!
Minerals—FREE—Come and Get Them!

Editor R&M:

If you have room in your fine magazine, I wish you would print this letter. I have an enormous accumulation of minerals which I, as a novice not too long ago, would have been happy to get. None rare but all good from all over the country.

Any R&M beginner who will stop here I will load him or her down.

No strings attached. Nothing to sell. I just don't want to throw away any of the minerals.

Am here most of the time but it might be a good idea to write in advance to make sure.

Charlie Bennett
210 W. Franklin St.
Horseheads, N.Y.

(Ed. note—Subscribers of R&M who wish membership cards write for them today—free to subscribers but please enclose self-addressed stamped envelope).

OREGON MIXTURE

20 lb. PACKAGE $8.00

Please send $2.00 for postage, extra postage returned. We will pay postage in excess of $2.00.

100 lb. SACK $35.00

(F.O.B. Medford, Oregon)

Shipped fourth-class freight to keep shipping cost low, unless a shipping preference is requested.

These Oregon Mixtures Contain:

AGATE, Assorted kinds
PRECIOUS SERPENTINE, green
AGATE-JASPER, makes beautiful gems
OBSIDIAN, several types
RHODONITE, Evans Creek
JASPER, assorted colors

THE MATERIAL LISTED ABOVE HAS VERY LITTLE, IF ANY, WASTE

OREGON GEM SUPPLY

P.O. Box 298, JACKSONVILLE, OREGON

HERE, AT LAST!

What every member of **Rocks and Minerals Association** has been waiting for—A 3¾"x3¾" all-weather Scotchlite decal of the **Rocks and Minerals Association** official emblem.

Identify yourself with the world's outstanding earth sciences organization. For outside mounting on car bumpers, hardhats, glass, metal, plastic, luggage or on any smooth clean surface.

Send 50¢ with your name and address to:

L. J. DUERSMITH

Accomac Rd. R.D. 1
Wrightsville, Penna.

WHERE TO GET IT

ALASKA NUGGETS

ALASKAN NUGGETS—Selected GOLD, weight 8 grains Troy, $1. PLATINUM Tinys, weight 3 grains, crystals showing, $1. Larger Gold, rough or Slugs, 12½¢ per grain. Larger platinums, rough or smooth, 33¢ per grain. Money refunded if not pleased.
FRANK H. WASKEY, Oakville, Washington

BOOKS

THE BOOK OF MINERAL PHOTOGRAPHS, 6x8½ inches, 118 pages, over 100 full-page illustrations of fine mineral or rock specimens with descriptions. Postpaid $1.68. B. M. Shaub, 159 Elm Street, Northampton, Massachusetts.

CABOCHONS

"Mandarin" Jade Cabochons. Lucent, brilliant, light green, selected Jade Mountain Nephrite. Many standard sizes, patterns. Specimen, tax paid and list, One Dollar. State pattern desired.
Frank H. Waskey, Oakville, Wash.

FLUORESCENCE

Fluorescent House, Beach Place, Branford, Conn. Largest selection of fluorescent minerals and accessories, lamps, etc., in the East. Visit us or send dime for catalog.

INFORMATION

OPAL — FACETED GEMS — CABS
Collector of rare stones with many duplicates to sell or trade. Inquiries promptly answered. SPECIAL — gem opal chips from cutter's table. 40 carats postpaid for only $1.50.
G. W. OWENS
Rt. 2, Box 266 B-15, Jacksonville, Arkansas

MAGAZINES

Rocks and Minerals, Box 29, Peekskill, N.Y. America's oldest and largest magazine devoted to rocks and minerals. $3.00 per year, sample copy 60c.

MINERALS

MINERALS UNLIMITED, 1722-24-28 University Avenue, Berkeley 3, California. The best specimens for the advanced or beginning collector. Write for lists, mentioning your interest.

MINERALS

RENFRO'S
2201 Sanborn Avenue, Fort Worth 3, Texas
Minerals, Gem Material, Fossils and Handwrought Jewelry.

R&MA MEMBERSHIP

Subscription for **Rocks and Minerals** entitles you to membership in the Rocks and Minerals Association. See R&MA Notes and News in this issue.